

# Annual Report & Audited Accounts 2021-22



राष्ट्रीय प्रौद्योगिकी संस्थान, मणिपुर

**NATIONAL INSTITUTE OF TECHNOLOGY MANIPUR**



# **Annual Report & Audited Accounts 2021-22**

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**NATIONAL INSTITUTE OF TECHNOLOGY MANIPUR**





## ***From the Director's Desk***

NIT Manipur set up in 2010, is an Institute of National Importance fully funded by Ministry of Education, Government of India. It has come a long way to establish itself as one of the leading technical institute in the region. NIT Manipur has been ranked 108th in the NIRF-2022 (Engineering). The Institute in spite of not receiving any fund under Capital Head since 2017 continues to excel in all fields. The Institute has made considerable improvement in the number of publications in reputed/refereed international journals. A total of 214 papers were published in top refereed Journals in various fields during the year along with 27 PhD degrees being awarded in the last Convocation. The institute now has around 26 ongoing sponsored research projects. The Institute has also filed 7 Patents which are under various stages. 4 Patents have already been granted.

The Institute has also been able to successfully tide over the challenges posed by Covid-19 pandemic. Classes were conducted in hybrid mode and even virtual practical classes were conducted. The Institute has also extended its facilities to the State Government during the Covid pandemic. A Boys Hostel was converted into a Covid isolation centre.

The Institute continues to achieve remarkable feat in the placement front with some students improving the highest pay package in the Institute's history. The Institute has been included as one of the QIP (Minor) Centre by AICTE. The Institute has been successfully executing several flagship and outreach programmes of the Government of India including Unnat Bharat Abhiyan. On the infrastructure front, a Girls Hostel and a Boys Hostel constructed under the funding of Ministry of Social Justice and Empowerment made functional in phase wise manner.

The Annual Report provides a glimpse of the various activities conducted by the Institute during the year.

I am pretty confident that with the support of my young dynamic team of faculty, staff, students, other stakeholders, funding agencies and public at large, we will be able to achieve greater heights and reaching newer landmarks in research, innovation and outreach programmes.

Prof.(Dr.) Goutam Sutradhar  
Director, NIT Manipur





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# 1.0 INTRODUCTION

## 1.1 Mission

The Institute is being accorded the status of '*An Institute of National Importance*' aspires to be a knowledge hub for the region. The Institute through its academic and research activities would act as incubation centre for aspiring 'Technopreneurs'. The Institute provides an ideal platform for national integration through emotional integration as half of the students are from outside the state. It envisions being an Institute producing human resource of world class standard who will contribute significantly in the wellbeing of mankind.

## 1.2 Vision

The Institute aims to provide the best infrastructure and amenities to the students. The Institute envisions being one of the best technical institutions in South-East Asia. The institute aims to attract students from the neighboring south-east Asian countries in view of the Act -East Policy of the Government of India. The Institute strongly believes that the success of an Institute lies in the faculty and will leave no stone unturned to attract the best faculty available in the country.

## 1.3 Objectives

- To nurture and develop talented young minds, encouraging creativity with academic excellence.
- To provide a platform to young entrepreneurs and technocrats to fulfil their dreams and aspirations.
- To encourage faculty and students to conduct research of international standard.
- To produce students of international industry standard.
- To set up Laboratories with latest equipment and state of the art facilities.
- To set up international standard infrastructure for extra curricular activities.

## 2.0 AN OVERVIEW

### 2.1 Profile

National Institute of Technology Manipur has been set up by the Ministry of Human Resource Development, Govt., of India to cater to the needs of thousands of students from the North East and outside in the field of Science and Technical Education. NIT Manipur started its first session on 2nd August, 2010 in Government Polytechnic, Takyel Campus, Imphal. The National Institute of Technology Act, 2007, amended in 2012 declared 20 existing and 10 new NITs as Institutes of National Importance. The institute is governed by the NIT Act 2007 and its statutes, and function under the overall guidance of the Board of Governors and the Hon'ble President of India as the Visitor of the Institute.

In status, it is regarded equivalent to a Central University. Half of students admitted to NITs are reserved for the students from the state where they are located and the other 50% is taken from the rest of the country through Central Seat Allocation Board on the basis of their JEE (Main) ranking.

### 2.2 Temporary Campus

The temporary campus is located at Government Polytechnic Campus, Takyel, Imphal. Since 2015, most of the facilities have been shifted to the permanent campus. As present only one Girls Hostel and few quarters are located in the temporary campus.



### 2.3 Permanent Campus

The permanent campus is located at the foot hills of the picturesque Langol hills at Lamphelpat in the outskirts of Imphal measuring an area of 341 acres. The permanent campus is hardly 4 km from the main market of Imphal. The Bir Tikendrajit International Airport is located at a distance of 7 km



from the campus. It is just 15 minutes' drive from the campus and is well-connected by multiple daily flights with Delhi, Kolkata, Silchar, Dimapur, Mumbai and Guwahati.

Imphal can be reached through National Highways No.2 and 37. The nearest railway station is Dimapur in Nagaland. Imphal can also be reached through Silchar Railway Station in Assam and Jiribam in Manipur. It takes around 8 hrs by bus from Dimapur to reach Imphal.

The first Boys Hostel in the permanent campus with a capacity of 150 was inaugurated on 21<sup>st</sup> Feb 2014 by the Hon'ble Chief Minister of Manipur. The campus has at present two Boys Hostel which could accommodate about 550 boys and around 10 Staff quarters. The campus has also three workshop blocks, an administrative building and an Academic Block. Some under construction buildings are also nearing completion. Except for a Girls Hostel and some staff quarters, the Institute has completely shifted to its permanent campus.

## **2.4 Administration**

National Institute of Technology is an autonomous Institute under the Ministry of Education (MoE), Govt. of India. The Institute functions under the overall guidance of the Board of Governors. The other statutory bodies are the Finance Committee, Building and Works Committee and the Senate. The Director is the principal academic and executive officer of the Institute.

### **Administrative Staff (Regular):**

Sl. No.	Employee Name	Designation
1.	Prof. (Dr.) Goutam Sutradhar	Director
2.	Dr. Th. David Singh	Registrar (i/c)
3.	Samarjit Singh	Executive Engineer
4.	L. Dorendro Singh	Assistant Registrar (Admn & Estt)
5.	Dr. Naorem Vidyavati Devi	Assistant Librarian
6.	Kh. Thangkin	SAS Officer
7.	Th. Robita Devi	Stenographer/ P.S to Registrar
8.	Fanny Khangembam	Junior Assistant (Admn & Estt.)
9.	Md. Amir Hussain	Junior Assistant (Accounts)
10.	Richard Mareem Chothe	Junior Assistant (Admn & Estt.)
11.	Ngaihulun Tonsing	Junior Assistant (Academic)

### **Administrative Staff (Contractual):**

Sl. No.	Employee Name	Designation
1.	Dr. I. Bidhanchandra Singh	Assistant Registrar (Academic)
2.	Kh. Saikya Singh	Technical Officer
3.	L. Ibocha Singh	Internal Audit Officer
4.	Suchitra Wangkhem	Superintendent (Admn & Estt.)
5.	L. Somokanta Singh	Superintendent (Academic)
6.	L. Jenifer	Junior Assistant (Admn & Estt.)
7.	Kh. Narmada Devi	Junior Assistant (Admn & Estt.)
8.	Ng. Binoi Singh	Junior Assistant (Admn & Estt.)
9.	H. Monorama Devi	Accountant

10.	G. Ranita Devi	Store Keeper
11.	Jonita Khwairakpam	PS to the Director
12.	S. Surjit Singh	Hostel Supervisor (utilized at Academic Section)

### **Deans and other administrative positions held by faculty members:**

Sl. No.	Faculty Name	Position held
1	Prof. Rajesh Kumar Bhushan	Dean (Academic Affairs)
2	Dr. P. Albino Kumar	Dean (Planning & Development)
3	Dr. Th. David Singh	Dean (Research & Consultancy)
4	Dr. O. Bakimchandra Singh	Dean (Faculty Welfare)
5	Dr. A. Dinamani Singh	Dean ( Student Welfare)
6	Dr. Khelchandra Thongam	Asst. Registrar i/c (Finance)
7	Dr. Mrinal Kanti Sarkar	Faculty i/c (Academic)

## **2.5 Academic Programmes**

The Institute offers four years full time Bachelor of Technology degree courses in Computer Science and Engineering, Electrical Engineering, Electronics and Communication Engineering, Civil Engineering and Mechanical Engineering. In addition, the Institute offers M.Tech and Doctoral programmes in all Engineering branches, Masters and Doctoral degree are also offered in Physics, Chemistry and Mathematics. The academic session is divided into two semesters, July-Dec and Jan-May. Five days week period with at least 90 working days in each semester are being followed.

## **2.6 Admission Procedure**

All admissions to National Institute of Technology Manipur are through Joint Entrance Examination (JEE) Main. Candidates interested in seeking admission in any NITs have to appear in JEE (Main) conducted by Central Board of Secondary Education (CBSE) on behalf of Government of India and fulfill all formalities of the CBSE. Counseling centres are set up throughout the country including NIT Manipur so that every aspirant is provided equal opportunity. The online counseling takes place in a very transparent system. The Government of India has fixed 50% quota of seats for Manipur and 50% quota for other states based on their JEE (Main) ranks.

Admission to M.Tech programmes are through GATE examination which is followed by counselling conducted by the institute. Admission to M.Sc programmes are through JAM entrance exam which is followed by counselling conducted by CCMN for admission.

## **2.7 Examination**

The Under graduate examinations of the Institute are conducted centrally by the Examination Cell of the Institute. Students are continuously evaluated through a continuous grading process. The academic performance of a student is assessed in terms of two indices viz; the Semester Performance Index (SPI) for a semester and Cumulative Performance Index (CPI) which is the Grade Point index for all the completed semesters at any point of time.

## **2.8 Training and Placement**

The Institute's Training and Placement Cell (T&P Cell) handles all issues related to students'

internship and final placements. The T&P Cell regularly organized industrial tour for the students thereby providing an opportunity to relate classroom teachings with reality. Workshops are also organized on regular basis thereby providing an interface between academia and industry.

## 2.9 Academic Calendar

The Academic Calendar prepared by the Institute and approved by the Senate and the BOG is notified for the students and staff. The Academic Calendar reflects the timeline of the various activities that are conducted in the Institute in an academic year.

No.NITM.3/(21-Acad)/A-Calendar/2012/14

Dated: 28/04/2021

### NOTIFICATION

#### Academic Calendar August- December 2021

(Classes may be Online/Offline as per Ministry SOPs due to Covid-19)

Details	Semester (August – December)
Registration of all continuing UG, PG & PhD students	26 <sup>th</sup> -30 <sup>th</sup> July 2021
Classes started for All continuing students	26 <sup>th</sup> July, 2021
Registration of new BTech students	As per CSAB/JoSAA
Registration of new MTech students	As per CCMT/CCMN
Registration of new PhD students	26 <sup>th</sup> -30 <sup>th</sup> July 2021
First instruction day for Fresh B.Tech students	As per CSAB/JoSAA
Mid Semester Examination (MSE) Theory	27 <sup>th</sup> – 01 <sup>st</sup> October 2021 Monday – Friday
I-Project/Thesis Review of MTech/MSc	On or Before 24 <sup>th</sup> September 2021 Friday
Last day of Instruction	20 <sup>th</sup> November 2021 Friday
Last date for returning evaluated MSE answer scripts to students	16 March 2020 Monday
Laboratory End Semester Examination	8 <sup>th</sup> – 12 <sup>th</sup> November 2021 Monday - Friday (in between classes will be there )
End Semester Examination (ESE) Theory	22 <sup>nd</sup> Nov – 26 <sup>th</sup> Nov 2021 Monday - Friday
II-Project/Thesis Review of MTech/MSc	On or Before 3 <sup>rd</sup> December 2021 Friday
Last date for showing evaluated ESE answer scripts to the BTech students	Before 13 <sup>th</sup> December 2021 , Monday
Last date of submission of grades to Academic Section	15 <sup>th</sup> December 2021 ,Wednesday

Sd/-

(Prof. Kh. Manglem Singh)

Registrar (i/c)

NIT Manipur

**NOTIFICATION**  
**Academic Calendar August- December 2021**  
**For Fresh M.Tech/M.Sc students**  
**(Classes may be Online/Offline as per Ministry SOPs due to Covid-19)**

Details	Semester (January – May)
Registration of new MTech/M.Sc students	29 <sup>th</sup> September, 2021- 4 <sup>th</sup> October, 2021
First instruction day for Fresh M.Tech/M.Sc students (starting Online class)	29 <sup>th</sup> September, 2021
Mid Semester Examination (MSE) Theory	25 <sup>th</sup> – 29 <sup>th</sup> October, 2021 Monday – Friday
Last day of Instruction	17 <sup>th</sup> December 2021, Friday
Registration of new PhD students	27 <sup>th</sup> – 01 <sup>st</sup> October 2021 Monday – Friday
Laboratory End Semester Examination	6 <sup>th</sup> – 10 <sup>th</sup> December 2021, Monday – Friday
End Semester Examination (ESE) Theory	13 <sup>th</sup> – 17 <sup>th</sup> December 2021, Monday – Friday
Last date for showing evaluated ESE answer scripts to the M.Tech/M.Sc students	On or Before 24 <sup>th</sup> September 2021 Friday
Last date for returning evaluated MSE answer scripts to students	23 <sup>rd</sup> December, 2021
Last date of submission of grades to Academic Section	24 <sup>rd</sup> December, 2021

Note: Mid-term Exam, End-Term Exam and grade submission for Ph.D course work will be held along with the 1<sup>st</sup> Semester M.Tech/M.Sc students.

Sd/-

**(Dr. Th. David Singh)**

Registrar (i/c)

NIT Manipur

**Academic Calendar for 2<sup>nd</sup> Semester B.Tech students**  
**March 2022- July 2022 (on line classes due of Covid -19)**

Details	Date
Registration of new B.Tech 2 <sup>nd</sup> Semester	21 <sup>st</sup> – 25 <sup>th</sup> March, 2022
Starting of B.Tech 2 <sup>nd</sup> Semester Online Classes	21 <sup>st</sup> March, 2022
Mid Semester Examination (MSE) Theory	9 <sup>th</sup> – 13 <sup>th</sup> May, 2022
Last day of Instruction	17 <sup>th</sup> June, 2022
Laboratory End Semester Examination	6 <sup>th</sup> – 10 <sup>th</sup> June, 2022
End Semester Examination (ESE) Theory B.Tech 2 <sup>nd</sup> Semester	20 <sup>th</sup> – 24 <sup>th</sup> June, 2022

Last date for showing evaluated ESE answer scripts to B.Tech 2 <sup>nd</sup> Semester students	04 <sup>th</sup> July, 2022
Last date of submission of B.Tech 2 <sup>nd</sup> semester grades to Academic Section	05 <sup>th</sup> July, 2022
Declaration of B.Tech 2 <sup>nd</sup> semester result	08 <sup>th</sup> July, 2022
Registration of B.Tech 3 <sup>rd</sup> semester	18 <sup>th</sup> – 21 <sup>st</sup> July, 2022
Starting of B.Tech 3 <sup>rd</sup> semester classes	18 <sup>th</sup> July, 2022 (Monday)

**Academic Calendar JAN- JUNE 2022**  
**B.Tech/M.Tech/M.Sc continuing students (Online Classes due to Covid-19)**

Details	Semester (January – May)
Registration of all continuing UG, PG & PhD students except B.Tech 1 <sup>st</sup> Year	11 <sup>th</sup> -14 <sup>th</sup> Jan 2022(Tuesday-Friday)
Starting of Classes of All continuing UG, PG & PhD students except B.Tech 1 <sup>st</sup> Year students	11 <sup>th</sup> Jan, 2022(Tuesday)
I-Project/Thesis Review of B.Tech/MTech	On or Before 25 <sup>th</sup> Feb 2022(Friday)
Mid Semester Examination (MSE) Theory	28 <sup>th</sup> – 4 <sup>th</sup> April 2022(Monday – Friday)
Laboratory End Semester Examination	18 <sup>th</sup> – 22 <sup>nd</sup> April 2022(Monday – Friday)  During Lab Class Hour Only
Last Date of submission of Project Work by BTech/M.Tech/MSc students	29 <sup>th</sup> April 2022 (Friday)
Online submission of feedback by students	22 <sup>nd</sup> April 2022 (Friday)
Last day of Instruction	13 <sup>th</sup> May 2022 (Friday)
End Semester Examination (ESE) Theory	16 <sup>th</sup> – 20 <sup>th</sup> May 2022
Last date of evaluation of BTech / MTech /MSc Project	27 <sup>th</sup> May 2022 (Friday)
Summer Vacation for Continuing of BTech / MTech /MSc students except B.Tech 1 <sup>st</sup> Year	21 <sup>st</sup> – 30 <sup>th</sup> June 2022(Saturday-Thursday)
Last date for showing evaluated ESE answer scripts to students	27 <sup>th</sup> May 2022 (Friday)
Last date for seeking clarification of evaluated ESE answer scripts by the students	3 <sup>rd</sup> June 2022 (Friday)
Last date of submission of grades to Academic Section	8 <sup>th</sup> June 2022 (Wednesday)
Declaration of End Semester Result	13 <sup>th</sup> June 2022 (Monday)
Summer Back Course Examination Registration	14 <sup>th</sup> – 20 <sup>th</sup> June 2022



Finalization of Branch Change	24 <sup>th</sup> June 2022 (Friday)
Supplementary Exam	27 <sup>th</sup> June – 01 <sup>st</sup> July 2022 (Monday – Friday)
Registration of all continuing UG, PG & PhD students	11 <sup>th</sup> – 15 <sup>th</sup> July 2022 (Monday – Friday)
Starting of Classes of All continuing UG, PG & PhD students except B.Tech/M.Tech/M.Sc 1 <sup>st</sup> Year students	11 <sup>th</sup> July 2022 (Monday)

## 2.10 Students

The Institute attracts students from various parts of the country giving it a national character. The Institute encourages students to actively take part in all cultural programmes so that students get exposure to the culture and tradition of other parts of the country. Under Ek Bharat Shreshtha Bharat, NIT Manipur and NIT Nagaland have been paired with MANIT, Bhopal. The students also regularly take part in cultural festivals organized by various NITs and IITs.

## 2.11 Games & Sports

The Institute is keen to provide opportunities to the students for their all-round development. Equal importance is given to overall personality development of the students and sports plays an important role.

The Institute also organizes Annual Sports Meet in a grand way. The sports meet is a multi-sporting event where both boys and girls are provided an opportunity to test their mettle in sports. The Institute regularly sent various teams to participate in Inter NITs sports meet held at different NITs.

## 2.12 Faculty Position

	No of Faculty Post Sanctioned	Sanctioned Post of NIT Manipur as on 31-03-2022											
Sl.	Post	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018	Total	Filled Position	Vacant Position
1	Professor	1	1	1	2	1	2	0	0	0	8	2	6
2	Associate Professor	2	2	2	5	1	3	0	0	0	15	8	7
3	Assistant Professor	5	4	4	9	2	7	0	0	0	31	27	4
	<b>Total</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>16</b>	<b>4</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>54</b>	<b>37</b>	<b>17</b>

	No. of Non-Faculty Post sanctioned	Sanctioned Post of NIT Manipur as on 01-03-2022											
Sl.	Post	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018	Total	Filled Position	Vacant Position
1	Director	1	0	0	0	0	0	0	0	0	1	1	0
2	Registrar	1	0	0	0	0	0	0	0	0	1	0	1
3	Asst. Registrar	1	0	0	0	0	1	0	0	0	2	1	1
4	Deputy Librarian/ Asst. Librarian	0	1	0	0	0	0	0	0	0	1	1	0

5	Library & Information Assistant	0	1	0	0	0	0	0	0	0	1	0	1
6	Sports Officer	0	1	0	0	0	0	0	0	0	1	1	0
7	Executive Engineer	0	1	0	0	0	0	0	0	0	1	1	0
8	Technical Assistant	1	1	0	0	0	0	0	0	0	2	0	2
9	Technical Assistant (System)	0	1	0	0	0	0	0	0	0	1	0	1
10	Technical Assistant/ Junior Engineer	0	0	1	2	5	5	0	0	0	13	0	13
11	Superintendent/ Accountant Secretary / Sr. Pharmacist	1	0	1	0	0	2	0	0	0	4	0	4
12	Stenographer	1	0	0	0	0	0	0	0	0	1	1	0
13	Junior Assistant	2	0	2	1	2	0	0	0	0	7	4	3
14	Technician	2	2	0	0	0	0	0	0	0	4	0	4
15	Technician/ Laboratory Assistant/ Lab Work Assistant	0	0	1	2	6	3	0	0	0	12	1	11
16	Attendant / Security Guard / Mali / Care Taker / MTS	0	0	2	1	3	2	0	0	0	8	0	8
	<b>Total</b>	<b>10</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>16</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>11</b>	<b>49</b>

### 2.13: Status of filling up of backlog vacancies of SC/ST/OBC and EWS

Sl.No	Post	Sanctioned Post	Filled Post	Vacancy				
				UR	SC	ST	OBC	EWS
1	Professor	08	02	03	01	0	02	00
2	Assoc. Prof	15	08	04	02	01	00	00
3	Asst. Prof	31	30	02	00	00	00	00
	<b>Total</b>	<b>54</b>	<b>39</b>	<b>09</b>	<b>03</b>	<b>01</b>	<b>02</b>	<b>00</b>

## 3.0 ACADEMIC STATISTICS

### 3.1 Courses Offered

(i) A four year B.Tech programmes in the following branches of Engineering and Technology are offered during the period:

Computer Science & Engineering  
Electrical Engineering  
Electronics & Communication Engineering  
Civil Engineering  
Mechanical Engineering

(ii) A two year M.Tech programmes in the following branches of Engineering and Technology are offered:

Computer Science & Engineering  
Electrical Engineering  
Electronics & Communication Engineering  
Civil Engineering  
Mechanical Engineering

(iii) A two year M.Sc programmes in the following branches of Science are offered:

Physics  
Chemistry  
Mathematics

In addition, PhD programmes in English, Chemistry, Physics, Mathematics, Computer Science & Engineering, Electronics and Communication Engineering, Mechanical Engineering, Civil Engineering, Electrical Engineering are also offered.

### 3.2 Admission Details

Branch-wise Strength:

#### B. Tech.

Sl. No.	Batch	CSE	EE	ECE	ME	CE	Total
1	2015-16	43	24	21	26	25	139
2	2016-17	38	24	17	23	23	125
3	2017-18	51	27	21	27	26	152
4	2018-19	56	30	29	29	30	174
5	2019-20	58	26	26	24	27	161

6	2020-2021	63	24	25	26	28	166
7	2021-2022	74	35	37	31	35	212
<b>Grand Total</b>		<b>383</b>	<b>190</b>	<b>176</b>	<b>186</b>	<b>194</b>	<b>1129</b>

## M. Tech.

Sl.	Batch	CSE	EE	ECE	ME	CE	Total
1	2017-18	11	9	13	15	17	65
2	2018-19	11	9	9	16	16	61
3	2019-20	6	9	6	7	15	43
4	2020-21	16	14	13	9	17	69
5	2021-22	11	8	9	8	16	52
<b>Grand Total</b>		<b>55</b>	<b>49</b>	<b>50</b>	<b>55</b>	<b>81</b>	<b>290</b>

## M.Sc.

Sl. No.	Batch	Physics	Chemistry	Mathematics	Total
1	2017-18	14	15	8	37
2	2018-19	15	14	12	41
3	2019-20	14	8	7	29
4	2020-2021	12	15	13	40
5	2021-2022	15	12	13	40
<b>Grand Total</b>		<b>70</b>	<b>64</b>	<b>53</b>	<b>187</b>

## Ph.D.

Sl. No.	Batch	CSE	ECE	EE	CE	ME	Physics	Chemistry	Mathematics	English	Total
1	2013-14	1	1	1	0	0	1	1	1	1	7
2	2014-15	6	3	2	2	3	3	0	3	2	24
3	2015-16	2	1	0	6	1	1	8	0	1	20
4	2016-17	3	1	0	4	6	1	3	1	0	19
5	2017-18	8	4	3	4	5	3	1	4	0	32
6	2018-19	2	6	4	3	7	10	5	9	0	46
7	2019-20	1	3	3	4	4	10	4	4	0	33
8	2020-2021	02	01	01	01	08	0	03	0	0	16
9	2021-22	4	5	4	4	4	9	6	5	0	41
<b>Grand Total</b>		<b>29</b>	<b>25</b>	<b>18</b>	<b>28</b>	<b>38</b>	<b>38</b>	<b>31</b>	<b>27</b>	<b>4</b>	<b>238</b>

## 4.0 Departmental Reports

### 4.1 Department OF Computer Science and Engineering

Academic Department

Name of the Department : Computer Science and Engineering

Head of Department : Dr. Khundrakpam Johnson Singh

Brief Introduction of the Department

The department of Computer Science and Engineering was established in the year 2010. The department conserves an excellent teaching and research environment with a team of qualified faculties. The curriculum is regularly updated to be at par with the modern industrial demand and state of the art research. The department since its establishment consistently fulfilled its role of producing IT industry ready engineers.

The departmental research is focused in the areas of Image Processing and Computer Vision, Soft Computing, Intelligent System Design, Speech Processing, IoT, Medical Image Processing, Information Security, Cryptography, Watermarking, Steganography, Cyber Security, Artificial Intelligence & Robotics, Pattern Recognition. The department has state of the art laboratory and research facilities. The department attracts various talented students from all parts of the country. Placements for our graduates are the best sought in the Institute.

Most of the Alumni are pursuing successful career in the industry and some have opted for higher studies. For further development of the department, our alumni remain in constant touch with us and are contributing actively. The department has 10 experienced and sincere faculty members and 4 non faculty members.

#### Highlight of research activities:

Image Processing, Cryptography, Watermarking, Steganography, Artificial Intelligence, Machine Learning, Speech Processing, Intelligent System Design, soft Computing, Networking, Network Security, Pattern Recognition, NLP, IoT.

#### Faculty Details (Regular): 04

SL. No.	Name of Faculty	Designation	Qualification	Email
1.	Prof. Khumanthem Manglem Singh	Professor	PhD (IIT, Guwahati)	<a href="mailto:manglem@gmail.com">manglem@gmail.com</a>
2.	Dr. Yambem Jina Chanu	Assistant Professor	PhD (NERIST, Itanagar)	<a href="mailto:jina.yambem@gmail.com">jina.yambem@gmail.com</a>
3.	Dr. Khelchandra Thongam	Assistant Professor	PhD (AIZU University, Tokyo)	<a href="mailto:thongam@gmail.com">thongam@gmail.com</a>



4.	Dr. Khundrakpam Johnson Singh	Assistant Professor	PhD (NIT, Durgapur)	<a href="mailto:johnkh34@gmail.com">johnkh34@gmail.com</a>
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#### Faculty Details (Contractual): 05

Sl. No.	Name of Faculty	Designation	Qualification	Email
1.	Dr. Chingakham Neeta Devi	Assistant Professor	PhD, Assam University	<a href="mailto:neeta.chingakham@gmail.com">neeta.chingakham@gmail.com</a>
2.	Dr. Anuradha Laishram	Assistant Professor	PhD, NIT Manipur	<a href="mailto:annu0286@gmail.com">annu0286@gmail.com</a>
3.	Dr. Maibam Mangalleibi Chanu	Assistant Professor	PhD, NIT Manipur	<a href="mailto:bbrobes.felix@gmail.com">bbrobes.felix@gmail.com</a>
4.	Teressa Longjam	Lecturer	Pursuing PhD, NIT Durgapur	<a href="mailto:teressalongjam@gmail.com">teressalongjam@gmail.com</a>
5.	Sanabam Bineshwor Singh	Lecturer	Pursuing PhD, NIT Manipur	<a href="mailto:bineshworsanabam@gmail.com">bineshworsanabam@gmail.com</a>

#### Staff Details (Contractual): 04

Sl. No.	Name of Staff	Designation	Qualification	Email
1.	Khaidem Panthoi Meetei	Technical Assistant (system)	MCA	<a href="mailto:panthoimeetei@yahoo.co.in">panthoimeetei@yahoo.co.in</a>
2.	Ksh. Merina Devi	Technical Assistant	Ph.D. Pursuing	<a href="mailto:merylkshetri@gmail.com">merylkshetri@gmail.com</a>
3.	Sanasam Renubala Devi	Technical Assistant	M. Tech	<a href="mailto:devisanasam@gmail.com">devisanasam@gmail.com</a>
4.	Nirvana Thokchom	Technical Assistant	M. Tech	<a href="mailto:nirvana.thokchom@gmail.com">nirvana.thokchom@gmail.com</a>

#### Teacher Trainees' Details: 01

Sl. No.	Name of staff	Designation	Qualification	Email
1.	Susma Thiyam	Teacher Trainee	Pursuing PhD, IIT Guwahati	<a href="mailto:thiyamsusma@gmail.com">thiyamsusma@gmail.com</a>

### Academic Activities

#### Students Enrollment

Name of the Course	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> year	4 <sup>th</sup> Year	Total
B.Tech	74	61	62	57	254
M.Tech/M.Sc	11	10	NA	NA	21

#### PhD Program

	2021-22
No.of Full Time	11
No.of Part Time	9
Total	20

Degree Awarded During 2021-22	03
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## Research Information

### Sponsored Research Project from Govt./ Semi Govt

Sl. No	Name of the Project	Funding Agency	Project Amount	Project PI
1.	Speech technologies in Indian languages (North Eastern Languages)	MeitY	Rs. 24,22,640/-	Dr.Yambem Jina Chanu
2	A Novel TDNN-LiGRU approach for CS ASR Meiteilon/Manipuri- English	SERB	Rs. 24,49,832/-	Dr.Yambem Jina Chanu
3	Empowering the Visually Challenged through ICT: Design and Development of Mobile and Desktop based Document Readers using Assamese and Manipuri OCR, ASR and TTS	IMPRINT II SERB	Rs. 75,00,000/-	Dr.Khelchandra Thongam

### Publications in Journals (2021-2022): 8

Authors' names, Name of paper, Publisher, Volume (Issue), Pages, Year (SCI/SCIE/Scopus/Others – Specify)

Sl. No	Authors' names, Name of paper, Publisher, Volume(Issue), Pages, Year (SCI/SCIE/Scopus/Others)
1	Usham Sanjota Chanu, Kh Johnson Singh, Yambem Jina Chanu, “An ensemble method for feature selection and an integrated approach for mitigation of distributed denial of service attacks” Concurrency Computat Pract Exper. 34( 13), 2022. (SCIE)
2	Teressa Longjam, Dakshina Ranjan Kisku, Phalguni Gupta. “Multi-scripted Writer Independent Off-line Signature Verification using Convolutional Neural Network”. Multimedia Tools and Applications, ISSN 1573-7721, 2022, (SCIE)
3	Maibam Mangalleibi Chanu, Dr.Khelchandra Thongam, “An automated epileptic seizure detection using optimized neural network from EEG signals”, Soft Computing, 2021. (SCIE)
4	A.Laishram,and K.Thongam, “Automatic Classification of Oral Pathologies using Orthopantomogram Radiography Images based on Convolutional Neural Network”, International Journal of Interactive Multimedia and Artificial Intelligence (IJIMAI),Vol.7, Issue.4,pp. 69-77,2022.(SCIE)
5	A.Laishram,and K.Thongam, “Kidney Diseases Classification based on SONN and MLP-GA in Ultrasound Radiography Images, Int. J. of Computational Science and Engineering” 2022 ( ESCI)
6	Huidrom, R., Chanu, Y.J. & Singh, K.M. “Neuro-evolutional based computer aided detection system on computed tomography for the early detection of lung cancer”, <i>Multimed Tools Appl</i> (2022). (SCIE)
7	P. K. Bhagat, Prakash Choudhary and Kh. Manglem Singh. “A novel approach based on fully connected weighted bipartite graph for zero-shot learning problems”, Journal of Ambient Intelligence and Humanized Computing. Springer. vol 12, pages 8647–8662 ,2021. (SCIE)
8	Khaidem Bikramjit Meitei, Thounaojam Rupachandra Singh, Khaidem Panthoi Meitei, “ <b>Optimal Bandwidth Allocation and Software-Defined Network Aggregation for Heterogeneous Mobile Network</b> ” Turkish Journal of Computer and Mathematics Education (TURCOMAT), Vol. 12 No. 13 (2021) , (SCOPUS)

### Publications in Conferences (2021-2022): 04

Sl. No	Authors' names, Name of paper, Publisher, Volume(Issue), Pages, Year (SCI/SCIE/Scopus/Others)
1.	Teressa Longjam, Dakshina Ranjan Kisku, Phalguni Gupta. <u>"Improving reliability of manipuri offline signature verification using writer independent paradigms"</u> . Thirteenth International Conference on Digital Image Processing (ICDIP 2021), SPIE (Scopus Indexed)
2.	Raja, N.T., Singh, K.M. (2022). Secure and Efficient Text Encryption Using Elliptic Curve Cryptography. In: Bhateja, V., Tang, J., Satapathy, S.C., Peer, P., Das, R. (eds) Evolution in Computational Intelligence. Smart Innovation, Systems and Technologies, vol 267. Springer, Singapore.
3.	<u>Usham Sanjota Chanu, Khundrakpam Johnson Singh, Yambem Jina Chanu, A novel approach for classification of DDoS attacks using Naive Bayes, 4th International Conference on Communication and Computational Technologies, Artificial Intelligence and Communication Technologies, February 26-27, 2022, organized by Rajasthan Institute of Engineering and Technology, Jaipur</u>
4.	Satyajit H, KH Johnson, A Review on Feature Selection Techniques in Intrusion Detection System Using Various Learning Algorithms, 4th International Conference on Communication and Computational Technologies, Artificial Intelligence and Communication Technologies, February 26-27, 2022, organized by <u>Rajasthan Institute of Engineering and Technology, Jaipur</u>

### Publications in Books/Book Chapters (2021-2022): 1

SL. No.	Authors'names, Name of paper, Publisher's Name, Volume(Issue), Pages, Year (SCI/SCIE/Scopus/Others – Specify)
1	Thiyam Susma Devi, Pradip K. Das. Development of ManiTo: A Manipuri Tonal Contrast Dataset. In: Dev, A., Agrawal, S.S., Sharma, A. (eds) Artificial Intelligence and Speech Technology. AIST 2021. Communications in Computer and Information Science, vol 1546, pp 255-263, 2022

### Short Term Course/ Workshop/ Seminar/ Conference Conducted by the department

A Short Term Course on "Introduction to C Programming" organized by Computer Science and Engineering Department, National Institute of Technology Manipur, Langol during 9th December, 2021 to 13th December, 2021.

### Internship or Industrial Visits:

List of Companies providing Internship to CSE students for 2021-22 are:

Samsung Data Systems India Private Limited (6 months Internship)

Samsung R&D (6 months)

INFOEDGE (6 months)

IBM (6 months)

PURE SOFTWARE (6 months)

MAQ SOFTWARE (6 months)

### Name of BTech students who graduated in

Sl. No.	Enrollment No	Name of the Student
1	18103001	Aditya Anand
2	18103002	Abhishek Kabrabam
3	18103003	Aditya Kumar Sharma

4	18103005	Akhilesh
5	18103006	Anurag Raj
6	18103007	Arambam Alexander
7	18103008	Anushka Tiwari
8	18103009	Boddeda Samba Gowtham
9	18103010	Atul Singh

10	18103011	Banoth Vamshi
11	18103012	Abhishek
12	18103013	Bhabani Sankar Hota
13	18103014	Bigan Kr Sharma
14	18103015	Henry Henminlen Haokip
15	18103016	Bittu Kumar
16	18103017	Harsh Vardhan
17	18103018	Hridayesh Singh
18	18103019	Kaigousang
19	18103020	Kuruva Venugopal
20	18103021	Laishram Bendy
21	18103022	Lochila Naveen
22	18103023	Nitish Kumar Gupta
23	18103024	Md. Atif Nawaz
24	18103025	Leonard Wangkheimayum
25	18103026	Monapati Ganesh Babu
26	18103027	Rapolu Palani
27	18103028	Piniseti Venkata Sai Sandeep
28	18103029	Moirangthem Romenkumar Singh
29	18103030	Rahul Gautam
30	18103031	Nikhil Nambam Singh
31	18103032	Rajani Verma
32	18103033	Nungleppam Jetli

33	18103034	Ratnesh Kumar
34	18103035	Pukhrambam Ajoy Singh
35	18103036	Ritik Raushan
36	18103037	Rohit Soni
37	18103038	Ramreiso Kashung
38	18103039	Sai Charan Narra
39	18103040	Romesh Langoljam
40	18103041	Saurav Mandal
41	18103042	Sheikh Dilwar Komol
42	18103043	Tanya Sai
43	18103044	Telu Shrinika
44	18103045	Thotchipem Lungleng
45	18103046	Ujjwal
46	18103047	Mohit Kumar
47	18103048	Vengada Pradeep Chandra Jogeswar Majji
48	18103049	Yengkhom Avis Singh
49	18103050	Verthya Teja Naik
50	18103051	Rishabh Jain
51	18103052	Vikash Singh
52	18103054	Vishwas Bordia
53	18103055	Yedla Ganesh
54	18103056	Bana Gowtham Kumar Reddy
55	18103057	Ujala

### **Name of MTech students who graduated in (2021-2022): 12**

Sl. No.	Enrolment No.	Name Of The Student
1	20203001	Kshetrimayum Yaiphabee Devi
2	20203002	L Seikhomang Khongsai
3	20203003	Shubham Kumar
4	20203004	Waseem Khan
5	20203005	Disinlung Kamei
6	20203006	A Lohrii
7	20203007	Irungbam Lenin Singh
8	20203008	Pheiroijam Prishika
9	20203011	Sonia Aribam
10	20203012	Kshetrimayum Boynao Singh
11	20203013	Sanjrambam Hemson Meetei
12	20203014	Leichombam Narendra Singh

### **Name of PhD students who graduated in (2021-2022) : 3**

Sl. No.	Enrollment No.	Name of the Student	Thesis Name	Name of the Supervisor/ Co-Supervisor	Date of Defence
1	14PCS004	Anuradha Laishram	Automatic Classification of Kidney Diseases and Oral Types and Anomalies using Ultrasound Images and Orthopantomogram Radiography Images based on Hybrid Neural Networks and Deep Learning	Dr.Khelchandra Thongam	25/01/2022
2	17403002	Pappu Kumar Bhagat	Automatic Automatic Image Annotation to Zero-shot Learning: Labeling Seen and Unseen Classes	Dr. Prakash Choudhary/ Prof. Kh Manglem Singh	15/02/2022
3	15PCS002	Ratishchandra Huidrom	To develop a computer aided detection system on computed tomography for lung cancer	Dr.Yambem Jina Chanu	08/07/2022

### Name of GATE/NET qualified students in (2021-2022): 02

Sl. No.	Name of student	GATE/NET	Percentile for GATE/GATE Score	Category
1	Thotchipem Lungleng	GATE	297	ST
2	Boddeda Samba Gowtham	GATE	375	OBC

### No. of students who have been placed in 2021-22: 70

SL. No	Company	No. of Students offered	CTC
1	AMAZON	1	47 LPA
2	MICROSOFT	1	45 LPA
3	NEWZERA	1	37 LPA
4	SAMSUNG	7	14.5 LPA
5	INFOEDGE	3	14.5 LPA
6	PUBLIC SAPIENTS	7	10 LPA
7	TIGER ANALYTICS	1	10 LPA
8	PURE SOFTWARE	2	9 LPA
9	DELOITTE	3	7.6 LPA
10	INFOSYS (HACKS WITH INFY)	1	8 LPA
11	INFOSYS (HACKS WITH INFY)	1	5 LPA
12	CAPGEMINI	7	7.5 LPA
13	LTI L1	1	8 LPA
14	INFOSYS L2	1	6.25 LPA
15	IBM	1	7.5 LPA
16	CAVISSON	1	4.5 LPA
17	PIE INFOCOMM	1	4.5 LPA
18	VIRTUSA L1	1	6 LPA
19	MINIORANGE	1	12 LPA



20	INFOSYS L0	3	3.6 LPA
21	COGOPORT	1	10 LPA
22	CDAC (BTech)	1	8.5 LPA
23	CDAC (MTech)	2	9.18 LPA
24	SAMSUNG SDS	7	13.5 LPA
25	COGNIZENT	5	6.75 LPA
26	TEKSYSTEMS GLOBAL SERVICES	1	6 LPA
27	TCS	1	9 LPA
28	COMVIVA	1	6.5 LPA
29	BHARAT ELECTRONICS LIMITED	2	11.04 LPA
30	ITC INFOTECH	1	4.25 LPA
31	VASSAR LABS	1	6 LPA
32	ITS Planners & Engineers	1	5LPA
33	BNY Mellon	1	17.35 LPA
34	TOTAL	70	

## 4.2 DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

### Academic Department

Name of the Department : Electronics and Communication Engineering

Name of the Head of Department : Dr. Manoj Kumar

### Brief introduction of the Department

The Department of Electronics and Communication Engineering, National Institute of Technology, Manipur, is involved in providing quality education at both Undergraduate (UG) and Postgraduate (PG) levels. UG programme in Electronics & Communication Engineering started in 2010. In 2014 a PG programme in VLSI Design and Embedded System started. The syllabi of the courses are continuously updated and the laboratories modernized to reflect the rapid changes in technology. It also offers high quality research programmes at Ph.D. level in the areas of Signal Processing, Wireless Communication, VLSI design, Analog Circuit Design, Microwave, Communication system and signal processing.

### Highlights of Research Activities

- Design and developed ADPLL based TRNG architectures using FPGA
- Design and developed unidirectional visitor counter using Bluetooth and FPGA
- Design and implemented 2D digital FIR Filter using VHDL
- Proposed a MOSFET-Based Memristor for High-Frequency Signal Processing application
- Implemented Half cutting dual-band circularly polarized monopole antenna for wireless communication
- Design and implemented A new high frequency MOS-C TOETQO using DXCCTA

### Faculty Members (Regular): 05

SL. NO.	Name of the Faculty	Designation	Qualification	Email
1	Dr Manoj Kumar	Assistant Professor	PhD (NIT Manipur)	manoj@nitmanipur.ac.in
2	Dr. Aheibam Dinamani Singh	Associate Professor	PhD (NERIST)	aheibamdina@yahoo.co.in
3	Dr. L. Surajkumar Singh	Assistant Professor	PhD (NIT Manipur)	surajloi@yahoo.co.in
4	Dr. Ashish Ranjan	Assistant Professor	PhD (IIT Dhanbad)	ashish.ece@nitmanipur.ac.in
5	Dr.Kalyan Mondal	Assistant Professor	PhD (Kalyani University)	kalyankgec@gmail.com

### Faculty Members (Contractual): 08

Sl. No.	Name of the Faculty	Designation	Qualification	Email
1	Dr Chitralekha Ngangbam	Assistant Professor	PhD (NIT Agartala)	ng.chitra@gmail.com

2	Dr. Keisham Pritamdas	Assistant Professor	PhD (NIT Manipur)	kpritamdas@nitmanipur.ac.in
3	Dr. Huirem Tarunkumar	Assistant Professor	PhD (NIT Manipur)	t a r u n _ h u i r e m @ nitmanipur.ac.in
4	Dr. Kharibam Jilenkumari Devi	Assistant Professor	PhD (NIT Manipur)	Jilenkumari@nitmanipur.ac.in.
5	Ms. Slam Devayani Devi	Lecturer	PhD Pursuing (NIT Manipur)	devu2.sd@gmail.com
6	S Jayananda Singh	Lecturer	PhD Pursuing (NERIST)	jayananda@nitmanipur.ac.in
7	Thingujam Churchil Singh	Lecturer	PhD Pursuing (NIT Manipur)	churchil.khumancha@gmail.com
8	Richard Ningthoujam	Junior Lecturer	PhD Pursuing (NIT Manipur)	richard.ningthoujam@gmail.com

### Staff Details (Regular): 01

SL. NO.	Name of the Staff	Designation	Qualification	Email
1	Robert Okram	Technician	B. Tech	robertsinghokram@gmail.com

### Staff Details (Contractual): 04

SL. NO.	Name of the Staff	Designation	Qualification	Email
1	Mr. Yumnam Shantikumar Singh	Technical Assistant	PhD Pursuing (NIT Manipur)	yshantikumar@nitmanipur.ac.in
2	Mrs. Anupa Hijam	Technical Assistant	M.Tech	ahijam@nitmanipur.ac.in
3	Mr. Salam Nonglenkhomba Meitei	Technical Assistant	M.Tech	nonglenkhomba@nitmanipur.ac.in
4	Mrs. N. Debala Devi	Technical Assistant	Diploma Engg., B.E	debala0103@gmail.com

### Trainee Teachers (if any): None

### Academic Activities

### Students Enrollment

Name of the Course	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> year	4 <sup>th</sup> Year	Total
B.Tech	37	24	24	27	112
M.Tech/M.Sc	9	10	NA	NA	19

### PhD Program

	<b>2021-22</b>
No. of Full Time	9

No. of Part Time	9
Total	18
Degree Awarded during 2021-22	2

## Research Information

### Sponsored Research Projects from Govt./Semi Government

Sl. No.	Name of the Project	Funding Agency	Project Amount	Project PI
1	“Design of Analog Signal Processing Circuits: A Current Mode Building Block Approach” completed on <b>27<sup>th</sup> October, 2021</b>	TEQIP-III Collaborative Research Scheme under NIPU (National Project Implementation Unit)	Rs. 12,97,000	Dr. Ashish Ranjan (Co-PI)

## Patents Details if any: NIL

### Publications in Journals (2021-22)

1. Sisira Hawaibam, Aheibam Dinamani Singh “**Error Rate Analysis of Different Modulation Schemes Over Shadowed Beaulieu-Xie Fading Channels**”, IETE Journal of Research, pp: 1-7, **May 2022**, DOI:10.1080/03772063.2022.2069604 (SCI)
2. M Ghosh, A Singh, SS Borah, J Vista, A Ranjan, S Kumar “**MOSFET-Based Memristor for High-Frequency Signal Processing**”, IEEE Transactions on Electron Devices, pp: 2248-2255, vol. 69 (5), **March, 2022** (SCI)
3. Shekhar Suman Borah, Mourina Gosh, Ashish Ranjan “**Higher Order Multifunction Filter Using Current Differencing Buffered Amplifier (CDBA)**”, Revue Roumaine Des Sciences Techniques—Série Électrotechnique Et Énergétique, pp: 59-64, vol. 1 (67), **March, 2022** (SCI)
4. Subhasish Banerjee, Mourina Ghosh, Pulak Mondal, Ashish Ranjan “**Third order inverse multifunction filter employing MOS resistors and capacitors**”, International Journal of Numerical Modelling: Electronic Networks, Devices and Fields, pp: e3002, **March, 2022**, <https://doi.org/10.1002/jnm.3002> (SCI)
5. Prerna Rana, Ashish Ranjan “**Odd-and even-order electronically controlled wave active filter employing differential difference trans-conductance amplifier (DDTA)**”, International Journal of Electronics, pp: 1623-1651, vol. 108 (10), **Oct., 2021** (SCI)
6. RK Nanao Ningthemcha, Rittwick Mondal, Anindya Sundar Das, Sourav Debnath, Soumyajyoti Kabi, Loitongbam Surajkumar Singh, Dipankar Biswas “**The effect of transition metal and heavy metal incorporation on the structural, optical and electrical properties of zinc-phosphate ternary glassy system: A comparative study**”, Materials Chemistry and Physics, pp: 125672, vol. 278, **Feb., 2022** (SCI)
7. Yumnam Bonney Singh, Premananda Chatterjee, RK Nanao Ningthemcha, Shuma Adhikari, Rittwick Mondal, Anindya Sundar Das, Soumyajyoti Kabi, Loitongbam Surajkumar Singh, Dipankar Biswas “**Compositional dependence of structural, physical, and, in particular, optical parameters of Se<sub>50-x</sub>Te<sub>30</sub>Sn<sub>20</sub>Sb<sub>x</sub> chalcogenide glassy systems**”, Materials Chemistry and Physics, PP: 125153, vol. 274, **Dec., 2021** (SCI)

- 8 Rittwick Mondal, Yumnam Bonney Singh, Anindya Sundar Das, Soumyajyoti Kabi, Loitongbam Surajkumar Singh, Dipankar Biswas “**Effect of Zn incorporation on physical properties of quaternary 0.7 Se–0.2 Ge–(0.1-x) Sb–xZn chalcogenide system: A theoretical prediction**”, Physica B: Condensed Matter, pp: 412896, vol. 612, **July, 2021 (SCI)**
  - 9 Kalyan Mondal “**A Novel-Shaped Reduced Size FSS-Based Broadband High Gain Microstrip Patch Antenna for WiMAX/WLAN/ISM/X-Band Applications**”, Journal of Circuits, Systems and Computers, pp: 2150290, vol. 30 (16), **Dec., 2021 (SCI)**
  - 10 Kalyan Mondal “**Half cutting dual-band circularly polarized monopole antenna for wireless communications**”, AEU-International Journal of Electronics and Communications, pp: 154012, vol. 142, **Dec., 2021 (SCI)**
  - 11 K Mondal, PP Sarkar “**Gain and bandwidth enhancement of microstrip patch antenna for WiMAX and WLAN applications**”, IETE Journal of Research, pp: 726-734, vol. 67 (5), **Sept., 2021, (SCI)**
  - 12 Huirem Bharat Meitei, Manoj Kumar “**FPGA implementation of true random number generator architecture using all digital phase-locked loop**”, IETE Journal of Research, pp: 1-10, **Aug., 2021 (SCI)**
  - 13 Rubila Laishram, Manoj Joshi, Ashish Ranjan “**A new high frequency MOS-C TOETQO employing DXCCTA**”, International Journal of Electronics Letters, pp: 1-16, **Jan., 2022, DOI: <https://doi.org/10.1080/21681724.2021.2025435>, (SCOPUS)**
- 14 Huirem Bharat Meitei, Manoj Kumar, “**FPGA implantations of TRNG architecture using ADPLL based on FIR filter as a loop filter**”, SN Applied Sciences, pp-1-13, vol.4(96), 2022. **(SCOPUS)**
  - 15 Manoj Kumar, Devechandra Singh, “**Design and implementation of unidirectional visitor counter using bluetooth and FPGA**”, International journal of early childhood special education, pp.5110-5120, vol.14(3), May, 2022. **(SCOPUS)**
  - 16 Thingujam Churchil, Manoj Kumar, “**Design and implementation of two-dimensional digital finite impulse response filter using very high speed integrated circuit hardware description language**”, IJECE, pp.3684-3691, vol.12(4), Aug. 2022. **(SCOPUS)**
  - 17 W Malemnganbi, Angom Jayalaxmi, Manoj Kumar, “**Design and Implementation of Secured Car Parking System using FPGA**”, International Journal of Applied Engineering Research , pp.180-188, vol.17(3), April, 2022.
  - 18 Manoj Kumar, Devechandra Singh, “**Design and development of Bluetooth based home automation system using FPGA**”, International Journal of Applied Engineering Research, pp.830-838, vol.16(10), Feb. 2022.

## **Publications in Conferences(2021-22)**

1. Salam Devayani Devi, Loitongbam Surajkumar Singh “**A Survey on Electrocardiogram Signal Detection and Classification on Hardware Platform**”, International Conference for Advancement in Technology (ICONAT), pp: 1-6, **March, 2022**
2. Simon Tongbram, Benjamin A Shimray, Loitongbam Surajkumar Singh “**A New Swarm-Based Improved FCM Clustering Algorithm for Efficient Image Segmentation**”, Asian Conference on Innovation in Technology (ASIANCON), pp: 1-6, **Aug., 2021**

3. Deepraj Chowdhury, Vasu Nand, Maifuz Ali, Lakhindar Murmu, Kalyan Mondal, Tapan Mandal “**Ultra-Wideband Microstrip Filter Using Interdigital Coupled Line Ring Resonator**”, 18th India Council International Conference (INDICON), pp: 1-5, **Dec., 2021**
4. Thingujam Churchill Singh, Manoj Kumar “**Digital FIR Filter Design**”, Asian Conference On Innovation in Technology (ASIANCON), pp: 1-5, Pune, India, **Aug., 2021**

### Publications in book/book Chapters (2021-22)

1. Kishorjit Nongmeikapam, Wahengbam Kanan Kumar, Aheibam Dinamani Singh “Prn-Sorb-Slam: A Parallelized Region Proposal Network-Based Swift ORB SLAM System for Stereo Vision-Based Local Path Planning”, Autonomous Driving and Advanced Driver-Assistance Systems (ADAS), pp: 167-192, **Dec., 2021**, CRC Press (Publisher), ISBN: 9781003048381
2. Wahengbam Kanan Kumar, Aheibam Dinamani Singh, Kishorjit Nongmeikapam “An Array of Processed Channel for Multiple Object Detection and Distance Estimation in a Video Using a Homographic Mono Camera System”, Autonomous Driving and Advanced Driver-Assistance Systems (ADAS), pp: 247-280, **Dec., 2021**, CRC Press (Publisher), ISBN: 9781003048381
3. Wahengbam Kanan Kumar, Mithlesh Prasad Singh, Aheibam Dinamani Singh, Rajesh Kumar, Kishorjit Nongmeikapam “Analysis of IoT interventions to solve voice pathologies challenges”, High Performance Computing for Intelligent Medical Systems, pp: 3-1 to 3-32, IOP Publishing Ltd, **July, 2021**, ISBN: 978-0-7503-3815-8
4. Mithlesh Prasad Singh, Aheibam Dinamani Singh, Rajesh Kumar, Kishorjit Nongmeikapam, Wahengbam Kanan Kumar “Recent trends in medical image segmentation with special focus on brain tumours and retinal images”, High Performance Computing for Intelligent Medical Systems, pp: 12-1 to 12-29, IOP Publishing Ltd, **July, 2021**, ISBN: 978-0-7503-3815-8.
6. Singh, Y.S., Ranjan, A., Adhikari, S., Shimray, B.A. (2022). “Lossless Grounded Resistorless Active Inductor Using FTFNTA”. In: Sikdar, B., Prasad Maity, S., Samanta, J., Roy, A. (eds) Proceedings of the 3rd International Conference on Communication, Devices and Computing. Lecture Notes in Electrical Engineering, vol 851. **Feb., 2022**, Springer, Singapore.

### Short Term Course/Workshop/Seminar/Conference Conducted by the Department:

1. Short Term Workshop on “Stress Management During Pandemic” under National Institute of Disaster Management, Ministry of Home Affairs, Govt. of India during Dec. 09 – 11, 2021
2. Short Term Workshop on “Food Processing During Pandemic” under National Institute of Disaster Management, Ministry of Home Affairs, Govt. of India during Sept. 23 – 25, 2021

### Internship or Industrial Visits: NIL

### Name of B. Tech students who graduated in 2021-22:

SL. NO.	Enrollment No.	Name of the Student
1	17105005	Archit Singh
2	18105025	Sunny Kumar
3	18105010	Janga Guru Prasad
4	18105017	Ramavath vamshi krishna
5	18105028	Vikrant Kumar
6	18105001	Arpit

7	18105020	Reddy Naveen
8	18105011	Kuna sai krishna
9	18105008	Dharmineni setu Madhav
10	18105002	Bhukya Sunil
11	18105027	Subash Yadav
12	18105009	Hembha Thingbaijam
13	18105029	W. Malemnganbi
14	18105018	Mangte lienminthang
15	18105021	S Siamlianmang
16	18105012	Khundrakpam khelemba
17	18105023	Shailja Gupta
18	18105016	Arpita
19	18105013	Lakavath Jayachander
20	18105005	Charlapalli Lokesh
21	18105007	Dewal Chaturvedi
22	18105026	Tanmay Mishra
23	18105004	Atish kumar
24	18105014	Mohan Hansda
25	18105022	Sanya Singh
26	18105006	Dhruvika Verma
27	18105003	Angom jayalaxmi devi

### **Name of M.Tech students who graduated in 2021-22:**

SL. NO.	Enrollment No.	Name of the Student
1	20205002	Khongbantabam mamota devi
2	20205008	Kongkham Sujalata
3	20205006	Maibam donegue Singh
4	20205003	Radharani Yumlembam
5	20205005	Gegerin konsam
6	20205009	Kelveen raj Oinam
7	20205007	Thingom devachandra Singh
8	20205004	Shamjetshabam nandeshowri devi
9	20205010	Sanasam premananda singh
10	20205011	Ngangom sunil chandra singh

### **Name of PhD students who graduated in 2021-22:**

SL. NO.	Enrollment No.	Name of the Student	Thesis Name	Name of the Supervisor / Co-Supervisor	Date of Defence
1	17405002	Mrs Vista J	Design of Mem-Elements and its Applications	Dr Ashish Ranjan	07/02/2022
2	18405006	Mr. Dipankar Biswas	Investigation of Structural, Electrical and Dielectric properties of Transition Metal oxide Doped Semiconducting Glass- Nano Composites	Dr L Surajkumar Singh	25/01/2022



**No of GATE/NET qualified Students in 2021-22:**

SL.NO.	Name of the Student	GATE/NET	Percentile for GATE	Category
NIL	NIL	NIL	NIL	NIL

**No of Students who have been placed in 2021-22: 22****Other Activities:****1. Details of NEP Activity Conducted by the Department in 2021-22:**

Sl. No.	Coordinators	Name of the STC program	Duration
1	Dr Kalyan Mondal& Dr. Aheibam Dinamani Singh	Communication Technology and simulation using HFSS	12/03/2022-16/03/2022
2	Dr. Ashish Ranjan, Dr. H. Tarunkumar & Mr. Y. Shantikumar	Analog circuit design using ORCAD: Hand on training	30/11/2021-04/12/2021
3	Dr. Keisham Pritamdas,Mr. Thingujam Churchill Singh, Ms. Salam Devayani Devi, Ms. Anupa Hijam & Ms. Debala Nameirakpam	Basic of Signal and image processing using MATLAB	11/10/2021-15/10/2021

**2. Steps taken for popularization of science and technology among students of NIT Manipur**

- Conducted various STC programme under NEP
- Conducted various short term workshop
- Conducted various lab activities among students of NIT Manipur



## 4.3 DEPARTMENT OF ELECTRICAL ENGINEERING

### Academic Department

Name of the Department : Electrical Engineering

Head of Department : Dr. Shuma Adhikari

### Brief Introduction of the Department

The Department of Electrical Engineering is established as one of the major departments of the National Institute of Technology Manipur (NITMN). NIT Manipur started its first session on 1st August, 2010. This institute is under MHRD.

Since its inception in 2010, the Department of Electrical Engineering has been actively engaged in teaching and research in diverse fields of Electrical Engineering. The Department of Electrical Engineering offers undergraduate (B.Tech) and post graduate (M.Tech) in Power & Control and research (Ph.D) programmes.

### Highlight of Research Activities

Control Systems & its application, Renewable energy, Energy planning, soft computing applications, cyber physical systems, Power System Dynamics and Control; Power Electronics and Drives, Signal, Image and Video Processing.

### Faculty Details (Regular): 04

SL. No.	Name of the faculty	Designation	Qualification	Email
1	Dr. ShumaAdhikari	Assistant Professor	Ph.D. (NIT Manipur)	<a href="mailto:shumaadhikari@gmail.com">shumaadhikari@gmail.com</a> <a href="mailto:shumaadhikari@nitmanipur.ac.in">shumaadhikari@nitmanipur.ac.in</a>
2	Dr. Benjamin A Shimray	Assistant Professor	Ph.D. (NIT Manipur)	<a href="mailto:benjaminshimray@gmail.com">benjaminshimray@gmail.com</a>
3	Dr. MrinalKanti Sarkar	Assistant Professor	Ph.D. (NIT Durgapur)	<a href="mailto:mrinal.ee@nitmanipur.ac.in">mrinal.ee@nitmanipur.ac.in</a> <a href="mailto:itsmrinal2u@gmail.com">itsmrinal2u@gmail.com</a> <a href="mailto:mks_ee@ieee.org">mks_ee@ieee.org</a>
4	Dr. Kundan Kumar	Assistant Professor	Ph.D. (University of PADOVA, Italy)	<a href="mailto:kundankumar@nitmanipur.ac.in">kundankumar@nitmanipur.ac.in</a>

### Faculty Details (Contractual): 06

SL. No	Name of the faculty	Designation	Qualification	Email
1.	Devakishore Phurailatpam	Lecturer	M.Tech (pursuing Ph.D)	<a href="mailto:bungcha@gmail.com">bungcha@gmail.com</a>
2.	Ingudam Chitrasen Meitei	Lecturer	M.Tech (pursuing Ph.D)	<a href="mailto:alwayschitrasen@gmail.com">alwayschitrasen@gmail.com</a>
3.	Lukram Dhanachandra Singh	Lecturer	M.Tech (pursuing Ph.D)	<a href="mailto:dhana.lukram0@gmail.com">dhana.lukram0@gmail.com</a>
4.	Simon Tongbram	Lecturer	M.Tech (pursuing Ph.D)	<a href="mailto:simontongbram@gmail.com">simontongbram@gmail.com</a>

5.	Laishram Khumanleima Chanu	Lecturer	M.Tech (pursuing Ph.D)	<a href="mailto:khumanleimac@gmail.com">khumanleimac@gmail.com</a>
6.	Rajkumari Malemnganbi Devi	Lecturer	M.Tech (pursuing Ph.D)	<a href="mailto:rajkumarimalemnganbi@gmail.com">rajkumarimalemnganbi@gmail.com</a>

### Staff Details (Contractual): 02

SL. No	Name of the Staff	Designation	Qualification	Email
1	Paonam Shantibala Devi	Technical Assistant	M. Tech.	<a href="mailto:sarjoo.09@gmail.com">sarjoo.09@gmail.com</a>
2	Linthoi RK	Multitasking	B.A SC.	<a href="mailto:Linthoirk9514@gmail.com">Linthoirk9514@gmail.com</a>

### Teacher Trainees' Details : NIL

### Publications in Journals (April 2021-March 22)

Authors' names, Name of paper, Publisher, Volume (Issue), Pages, Year (SCI/SCIE/Scopus/Others – Specify)

Sl. No.	Authors' names, Title of the paper, Name of the journal, Vol (issue), pages, years, SCI/Scopus/others
1	Yumnam Bonney Singh, Premananda Chatterjee, RK NanaoNingthemcha, ShumaAdhikari, RittwickMondal, AnindyaSundar Das, SoumyajyotiKabi, LoitongbamSurajkumar Singh, Dipankar Biswas, Compositional dependence of structural, physical, and, in particular, optical parameters of Se <sub>50-x</sub> Te <sub>30</sub> Sn <sub>20</sub> Sbx chalcogenide glassy systems, Journal on Materials Chemistry and Physics, Volume 274 Pages125-153, Publisher-Elsevier, publication date2021/12/1.
2	Benjamin A Shimray, R. M. (2021). A Comprehensive multi criteria model to rank Solar Power Plant Sites using soft computing techniques. Design Engineering, 884-896. Retrieved from <a href="http://www.thedesignengineering.com/index.php/DE/article/view/2342">http://www.thedesignengineering.com/index.php/DE/article/view/2342</a> (SCOPUS)
3	SamyuelNeelam and B. Shimray, "Observation of Enhanced Network Performance in IoT Process Control and Data Sensing with RINA," in Journal of Communications Software and Systems, vol. 17, no. 2, pp. 154-159, June 2021, doi: 10.24138/jcomss-2021-0027 (SCOPUS)
4	Simon Tongbram, Benjamin A Shimray, LoitongbamSurajkumar Singh, Segmentation of image based on k-means and modified subtractive clustering, Journal on Indones. J. Electr. Eng. Comput. Sci, Volume22, Issue3, Pages1396-1403, Publication date2021/6.
5	B. Samyuel Neelam and B. Shimray, Architecture, Ability, and Adaptability of Recursive Internetworking Architecture - A Review journal on Recent Advances in Computer Science and Communications, Volume15, Issue7, Pages966-976, Publication on 2021/6/28
6	Rajkumari Malemnganbi, Benjamin A Shimray, An integrated multiple layer perceptron-genetic algorithm decision support system for photovoltaic power plant site selection, Journal on International Journal of Electrical & Computer Engineering (2088-8708), Volume12, Issue2, Publication date 2022/4/1.
7	SumantAnand, Ark Dev, <b>MrinalKanti Sarkar</b> , Subrata Banerjee, "Non-Fragile Approach for Frequency Regulation in Power System with Event-Triggered Control and Communication Delays" <i>IEEE Transactions on Industry Applications</i> , Volume 57, Issue 3, pp-2187-2201, May-June, 2021, DOI: 10.1109/TIA.2021.3062774.
8	SumantAnand, Ark Dev, <b>MrinalKanti Sarkar</b> , "Generalized Proportional Integral Observer-Based Event-Triggered Control for Frequency Regulation in Power Systems with Wind Energy," <i>Asian Journal of Control</i> , Wiley (SCI:3.452) <b>Accepted</b> (28/08/2021)

9	Ark Dev, David F. Novella-Rodriguez, SumantAnand, <b>MrinalKanti Sarkar</b> , “Multi Observer Based Sliding Mode Load Frequency Control with Input Delay Estimation” <i>ASME Letters in Dynamic Systems and Control</i> , Volume 1, Issue 4, October, 2021.
10	Ark Dev, SumantAnand, <b>MrinalKanti Sarkar</b> , “Nonlinear disturbance observer based adaptive super twisting sliding mode load frequency control for nonlinear interconnected power network” <i>Asian Journal of Control</i> , Wiley, <a href="https://doi.org/10.1002/asjc.2364">https://doi.org/10.1002/asjc.2364</a> (SCI:3.452), Journal on Asian Journal of Control Volume 23, Issue 5, Pages2484-2494, Publication Date2021/9.
11	V. Mali, R.Saxena, <b>K. Kumar</b> , A.Kalam, and B.Tripathi, “Review on battery thermal management systems for energy-efficient electric vehicles,” in Renewable and Sustainable Energy Reviews, vol. 151, 111611, pp. 1-15, Nov. 2021 ( <b>IF:16.79</b> ).
12	Ingudam Chitrasen Meitei and RajenPudur, “Optimization of Hybrid System for an Institute and a Hospital,” Design Engineering, vol. 2021, no. 7, Jun. 2021. (Scopus)
13	Ingudam Chitrasen Meitei and RajenPudur, “Optimization of wind solar and battery hybrid renewable system using backtrack search algorithm,” Indonesian Journal of Electrical Engineering and Computer Science, vol. 24, no. 3, Dec. 2021. (Scopus)
14	Laishram Khumanleima Chanu and Rajen Pudur, “Voltage and Frequency Regulation of Micro Hydro-Based Renewable Energy Generation”, Journal of Optoelectronics Laser, Vol. 41, no. 7, Publication date 2022/07/25. (Scopus)

## Publications in Conferences (April 2021- March 2022)

Authors' names, Name of paper, Name of the conference, Volume (Issue), Pages, Year (Scopus index/Others – Specify)

Sl. No.	Authors' names, Title of the paper, Name of the conference, Vol (issue), pages, years, SCI/Scopus indexed
1	Badal Kumar, ShumaAdhikari, Nidul Sinha, ‘Real time simulation of an Intelligently Optimized Controller to Control the Frequency of an Islanded AC Microgrid: MBA-MBIMC Tuning Approach’, 2020 3rd International Conference on Energy, Power and Environment: Towards Clean Energy Technologies 2021
2	Samuel Lalngaihawma, SubirDatta, Subhasish Deb, Sumana Das, Robert Singh, ShumaAdhikari, S Mayan-glambam. Load frequency control of a photovoltaic-biogas-bio biodiesel-battery based micro-grid system. 2022 4th International Conference on Energy, Power and Environment (ICEPE)page 1-6 Publication Date 2022/4/29
3	YumnamShantikumar Singh, Ashish Ranjan, ShumaAdhikari, Benjamin A Shimray Lossless Grounded Resistorless Active Inductor Using FTFNTA. Proceedings of the 3rd International Conference on Communication, Devices and Computing.page273-282, Publication Date 2022.
4	BhushanaSamyuelNeelam, Benjamin A Shimray, Applicability of RINA in IoT communication for acceptable latency and resiliency against device authentication attacks. Conference on 2021 6th International Conference for Convergence in Technology (I2CT), page 1-7, Publication Date 2021/4/2, (IEEE)
5	S. Tongbram, <b>B. A. Shimray</b> and L. S. Singh, «A New Swarm-Based Improved FCM Clustering Algorithm for Efficient Image Segmentation,» <i>2021 Asian Conference on Innovation in Technology (ASIANCON)</i> , 2021, pp. 1-6, doi: 10.1109/ASIANCON51346.2021.9544682 ( <b>SCOPUS</b> )
6	B. S. Neelam and <b>B. A. Shimray</b> , “Performance Assessment of RINA Adoption tool shim-tcp-udp in IoT-SCADA Application” <i>2021 2nd International Conference for Emerging Technology (INCET) Belgaum, India. May 21-23, 2021. (SCOPUS)</i>
7	Bonela Anil Kumar, Mrinal Kanti Sarkar Sliding Mode Control of Two-Switch Buck Boost Non-Isolated On-Board Battery Charger, Conference on 2021 IEEE 4th International Conference on Computing, Power and Communication Technologies (GUCON), Pages 1-6, Publisher-IEEE, Publication date-2021/9/24.
8	A. Devanshu, <b>K Kumar</b> , and R Kumar, “Implementation of SRF Theory to DSTATCOM for Power Quality”, in Proc. of IEEE Delhi Section International Conference on Electrical, Electronics and Computer Engineering ( <b>DELCON-2022</b> ), 11 <sup>th</sup> -13 <sup>th</sup> Feb. 2022, NSUT, Dwarka, New Delhi, India pp. 1-6.

9	<b>K. Kumar</b> , “Performance Analysis of onboard GaN-based Synchronous Rectifier used in Dynamic Wireless Charging System for Electric Vehicles” in Proc. of IEEE International Conference on Smart Technologies for Power, Energy and Control (STPEC 2021), Bilaspur, India, 19-22, Dec. 2021, pp.1-6
10	<b>K. Kumar</b> , K.V.V.S.R. Chowdary, V Mali, and R R Kumar, “Analysis of Output Power Variation in Dynamic Wireless Charging System for Electric Vehicles” in Proc. of IEEE International Conference on Smart Technologies for Power, Energy and Control (STPEC 2021), Bilaspur, India, 19-22, Dec. 2021, pp.1-6.
11	<b>K. Kumar</b> , K.V.V.S.R. Chowdary, S. Padmanaban, and R. Prasad, “Analysis of Solar PV Fed Dynamic Wireless Charging System for Electric Vehicles,” in Proc. of IEEE Industrial Electronics Society Conf. (IECON), Toronto, Canada, 13-16, Oct. 2021, pp. 1-6, ISBN:978-1-5090-3474-1.
12	M.T. Rana, A. Sarkar, M.Abid, S. Banerjee, and <b>K. Kumar</b> , “Comparative Analysis of Classical and Predictive Control of Bidirectional Quasi Z-Source Converter,” in Proc. of IEEE Industrial Electronics Society Conf. (IECON), Toronto, Canada, 13-16, Oct. 2021, pp. 1-6, ISBN:978-1-5090-3474-1.
13	R.R. Kumar, C. Chetri, P. Devi, A. Kumari, <b>K. Kumar</b> , and R. K. Saket, “Electromagnetic Feature Study of a Novel Dual-Stator Five-Phase Spoke-Type Permanent Magnet Motor for Electric Vehicles Application,” in Proc. of IEEE International Power and Renewable Energy Conference (IPRECON), Sep. 2021, Kerala, pp. 1-6.
14	Ingudam Chitrasen Meitei and RajenPudur, “Optimize Model of Hybrid Renewable System with Minimum Power Fluctuation Rate,” 2021 IEEE International Conference on Computing, Communication and Automation (ICCCA), Jan. 2022

## Publications in Books/Book Chapters (April 2021- March 22)

Authors' names, Name of paper, Publisher's Name, Volume(Issue), Pages, Year (SCI/SCIE/Scopus/Others – Specify)

Sl. No	Authors' names, Title of the book/book chapter, Name of the publisher, Vol (issue), pages, years
1	Yumnam Shantikumar Singh, Ashish Ranjan, Shuma Adhikari, Benjamin A Shimray, Lossless Grounded Resistorless Active Inductor Using FTFNTA, Book Proceedings of the 3rd International Conference on Communication, Devices and Computing, Pages 273-282, Publisher-Springer, Singapore, Publication date-2022
2	Thiam Vikas, Rajkumari Malemnganbi, Benjamin A Shimray, MLP-BP Based Optimal Ranking of Solar Power Plant Site, Energy and Exergy for Sustainable and Clean Environment, Volume Pages 33-42, Publisher, Springer, Singapore, Publication date-2022
3	Amit Kumar Irungbam, Ingudam Chitrasen Meitei, Benjamin A Shimray, Planning and Design of an Optimal Hybrid Renewable Energy System for Porompat Area of Manipur in North East India, Book on Energy and Exergy for Sustainable and Clean Environment, Volume 1, Pages 417-432, Publisher-Springer, Singapore, Publication date-2022.
4	Bhushana S Neelam, Benjamin A Shimray, Architecture, Ability, and Adaptability of Recursive Internetworking Architecture - A Review. Source of Recent Advances in Computer Science and Communications (Formerly: Recent Patents on Computer, Science), Volume 15, Issue 7
5	Sandip K Chaurasiya, Joydeep Dutta, Arindam Biswas, Gorachand Dutta and Mrinal Kanti Sarkar “Computational Intelligence in Wireless Sensor Networks-Principles & Applications”, CRC Press (Accepted)
6	N. Rana, S. Banerjee, and <b>K. Kumar</b> , “High Gain Buck-Boost Converter for Solar Photovoltaic (PV) System,” in Proc. of the Springer book “DC-DC Converters for Future Renewable Energy Systems”, Book Series: Energy Systems in Electrical Engineering, Springer 2022. ISBN: 978-981-16-4388-0, <a href="https://www.springerprofessional.de/en/high-gain-buck-boost-converter-for-solar-photovoltaic-pv-system/19703246">https://www.springerprofessional.de/en/high-gain-buck-boost-converter-for-solar-photovoltaic-pv-system/19703246</a>
7	A.K. Acharya, K.V.V.S.R. Chowdary, P.K. Sahu, and <b>K. Kumar</b> , “Simulation and Analysis of Single-Phase Cascaded H-Bridge Multi-Level Inverter for Solar PV Application,” in Proc. of Advances in Smart Grid Automation and Industry 4.0 (ICETSGAI4.0), Lecture Notes in Electrical Engineering, vol 693, pp. 543-554, Springer, Singapore. 2021, ISBN 978-981-15-7675-1 <a href="https://doi.org/10.1007/978-981-15-7675-1_54">https://doi.org/10.1007/978-981-15-7675-1_54</a>

8	<b>K. Kumar</b> , S. Pal, D. Kumar, “Analysis and Simulation of Boost Converter versus Tri-state Boost Converter,” in Proc. of Advances in Smart Grid and Renewable Energy. ETAERE 2020. Lecture Notes in Electrical Engineering, vol 691, pp. 175-187, Springer, Singapore, 2021, ISBN978-981-15-7511-2 <a href="https://doi.org/10.1007/978-981-15-7511-2_16">https://doi.org/10.1007/978-981-15-7511-2_16</a>
9	Amit Kumar Irungbam, Ingudam Chitrasen Meitei, Benjamin A Shimray, ‘Planning and Design of an Optimal Hybrid Renewable Energy System for Porompat Area of Manipur in North East India,’ Energy and Exergy for Sustainable and Clean Environment, vol. 1. pp 417- 432, July 22

### External sponsored R&D project (April 2021-March 22)

SN	Title of the project	Duration	Funding Agency	Amount in Lakh (Rs)	Name of PI/ Co-PI
1	Project for supporting Innovation ideas	1 Years	National Innovation Foundation	Rs. 300000/- Lakh	Dr. Benjamin A Shimray
2	Practical Implementation of Non-Fragile Sliding Mode Controller based Non-Isolated Universal On-Board Battery Charger for Electric Vehicle. ”	36 Months	SERB, Govt. of India	27.431 lakhs	Dr. Mrinal Kanti Sarkar
3	Technology Gap Analysis Study for the Fisheries and Food & Spices Cluster of Manipur ”	06 Months	TIFAC, Govt. of India	10 Lakhs	Dr. Mrinal Kanti Sarkar

### Workshop/FDP/STTP conducted (April 2021-March 22)

SL. No	Name	Duration	Name of the organizer
1	<i>Overview of Power Electronics converters, controls and applications</i>	5 <sup>th</sup> -9 <sup>th</sup> October, 2021	EE DEPT under NEP
2	Alternate and Renewable Energy Solutions	1 <sup>st</sup> November 2021 to 5 <sup>th</sup> November 2021	EE DEPT under NEP
3	<i>Introduction to Electrical Engineering</i>	25 <sup>th</sup> Jan to 29 <sup>th</sup> Jan 2021	EE DEPT under NEP
4	“Management of Intellectual Property Uncertainty in Designing and Manufacturing for Electric Vehicle Systems	21 <sup>st</sup> -25 <sup>th</sup> Feb., 2022	AICTE Sponsored FDP
5	Emerging Trends and Developments in Electric Vehicles” as <i>Co-ordinator</i> ,	25 <sup>th</sup> -29 <sup>th</sup> October, 2021	ATAL Sponsored FDP

### Name of Major Laboratory/Workshop

SL. No	Name of the equipment/device	Cost in Lakh (Rs)
1	Smart grid system setup	2,00,37,500.00
2	Renewable Energy lab set up	79,76,250.00
3	Complete Dissectible machine System	27,77,250.00
4	Virtual electrical machine lab software along with PC based data acquisition and control of various rotating machine	67,00,000.00

5	Integrated Controller and Chassis,4-Port,RS485/RS422 Serial Interface Module for Compact RIO, 400 Vrms L-N,24-bit,50 kS/s/channel,3-channel,AI Module, 4 channel input,5 amps,ISO,50k,24-bit, 8-channel 24 V Logic ,100 microseconds,Sourcing Digital Output Module, 4-channel Relay [30 VDC (1.5A),60 VDC(1A),250VAC(1.5)], Spring Term,+/-10 V16-bit,100kS/s/ch,4-channel,Simultaneous AO C,Series Module, GPS Timestamping and Synchronization Module, Accessories	22,86,185.00
6	Power System Lab Set up	27,60,523.00
7	HARDWARE IN LOOP SIMULATION (OPAL-RT)	40,84,763.00

### Name of major Software

SL. No	Name of the software	Proprietary or Not	Cost in Lakh (Rs)
1	NI LabVIEW Software	Proprietary	7,91,250.0
2	MATLAB 2013a by Mathworks and simulink	Proprietary	5,68,181.0
3	PSIM	Propriety	13,74,700.00

### Number of Students (2021-22) in B.Tech/M.Tech/Ph.D/M.Sc (Whichever is offered)

Name of the Course	1st Year	2nd year	3rd year	4th year	Total
B.Tech	35	22	24	22	103
M.Tech	4	8	NA	NA	12

### Ph. D Program.

	2021-2022
No.of full time	6
No.of part time	4
Total	10
Degree awarded during 2021-22	1

### Name of B.Tech students who graduated in 2021-22: 23

SL. NO.	REG NO	NAME OF STUDENTS
1	17104002	BESII NELI
2	17104003	BODAGAM SANJANA REDDY
3	17104004	MONIKA NAOROIBAM
4	17104005	SHAILESH PRAJAPATI
5	17104006	KONGBAM YAIPHABI
6	17104007	SANTOSH YADAV
7	17104008	MAIKUILA SOPHIA P
8	17104009	PRABHAT KUMAR
9	17104010	M. DAMJOYSON
10	17104011	ABHAY JANGIR
11	17104013	MAYANK RAJ
12	17104014	MAIBAM BIDYASAGAR
13	17104015	KATTA RAVI
14	17104016	MOIRANGTHEM BABYLIZA DEVI
15	17104017	KAMAL SINGH
16	17104018	LHUNGOUMANG KHONGSAI



17	17104019	CHANDAN KUMAR
18	17104020	KHAMLALSON
19	17104023	ROHIT SHARMA
20	17104024	VISHAL KATTIYAR
21	17104025	T. GINJOHNSON
22	17104026	AMAN KUMAR
23	17104027	SHUBHAM PRATAP MEENA

### **Name of MTech students who graduated in 2021-2022: 06**

SL. NO.	REG NO	NAME OF STUDENTS
1	19204002	MD. ASHIF KHAN
2	19204003	SURAJ MAYENGBAM
3	19204005	BIPIN CHANDRA DEV
4	19204006	RAMHLIMUM
5	19204007	ELICE MOIRANGTHEM
6	19204009	NAMOIJAM SUSHIL SINGH

### **Name of M-Tech Part Time students who graduated in 2021-22 : 02**

SL. No.	REG NO	NAME OF STUDENTS
1	18204008	LAIRENLAKPAM SANTHALEMBI
2	18204009	STEFFI OKRAM

### **Name of Ph.D students who graduated in 2021-22**

REG No.	Student Name	DEGREE	BRANCH	Name of the supervisor/ Co-supervisor	
17404001	ARKDEV	Ph.D	ELECTRICAL EN- GINEERING	DR.MRINAL KANTI SARKAR	28-06-2021

### **Name of GATE/NET qualified students in 2021-22**

SL. No	Name of the student	GATE or NET	Percentile for GATE	Gen/OBC/SC/ST
1	SALAM IMERSON SINGH	GATE	—	OBC

### **Name of the students (2021-22), who have been placed**

SL. No	Company	No. of students offered	CTC
1	L&T	1	6LPA
2	Infosys	2	3.6 LPA
3	Tata Power	2	6.06LPA
4.	JSW	1	7.5 LPA
5	KEC International	2	3.6LPA
6	ABB	5	7.5LPA

7	Indradhanush Gas Grid Limited	2	8 LPA
8	Pure Software	1	9 LPA
9	Fiat India Automobile	1	5LPA
10	TCS	1	9LPA
11	Capgemini	2	7.5LPA
12	IBM	1	7.5 LPA
13	Cognizant	1	7 LPA

## Other Activities of Dr.Kundan Kumar:

### 1. Editorial Activities

Executive Committee member of IEEE Silchar Subsection since August 2021.

### Technical committee member:

1. Session Chair “Technical Session: FD7, Track 10: Networking and others, 2022 3rd International Conference on Electrical and Electronics Engineering (ICEEE-2022), January 8-9, 2022 School of Engineering, University of Malaya, Malaysia.
2. Session Chair “Technical Session TS\_RE2”, IEEE International Conference on Smart Technologies for Power, Energy and Control (STPEC 2021), 19-22, Dec. 2021, Bilaspur, India.
3. Session Chair “SD4: Track 8: Power, Energy and Power Electronics Power Generation,”, 6th IEEE International Conference on Computing, Communication and Automation (ICCCA-2021) 17-19 Dec, 2021 Arad, Romania.
4. Session Chair “S731 - SS Static and dynamic wireless charging solution for EVs Coil configuration, design, and control of power electronics converters”, 47th IEEE Annual Conference of the IEEE Industrial Electronics Society (IECON-2021), October 13-16, 2021, Toronto, Canada.
5. Session Chair “S471 - SS Modeling, Control and Design of Propulsion Drive for EVs”, 47th IEEE Annual Conference of the IEEE Industrial Electronics Society (IECON-2021), October 13-16, 2021, Toronto, Canada.
6. Session Chair “Track 8: Power, Energy and Power Electronics (Session: TD9)”, IEEE IAS 4th International Conference on Computing, Power and Communication Technologies (GUCON 2021), 24-26 Sep, 2021, Galgotia University, Delhi, India.

### Expert/Technical Talk

1. Delivered an expert talk in the AICTE Sponsored Faculty Development Program on “**Management of Intellectual Property Uncertainty in Designing and Manufacturing for Electric Vehicle Systems**” entitled “**Electric Vehicle Charging System**” organized by the Department of Electrical Engineering, National Institute of Technology, Manipur, Imphal, India, during 21st -25th Feb., 2022.
2. Delivered an expert talk on “ **Wireless Charging System: Static and Dynamic** ”, in a one week online AICTE-ISTE Sponsored Induction / Refresher Faculty Development Program under the title of **Smart System and E-mobility Challenges** organized by the Department of Electrical Engineering of Yashwantrao Bhonsale Polytechnic, Sawantwadi Maharashtra from 10 Feb. to 16 Feb. 2022.
3. Delivered an expert talk on “**Wireless Charging Systems for Electric Vehicles**” in one week Short Term Training Program on “**Alternate and renewable Energy Solution**” under National Education Policy (NEP-2020)” organized by Department of Electrical Engineering, National Institute of Technology, Manipur, Imphal, India, during 19<sup>th</sup> -23<sup>rd</sup> November, 2021.
4. Delivered an expert talk on “**Wireless Charging Systems for Electric Vehicles: Static and Dynamic**” in one week ATAL Sponsored FDP on “**Emerging Trends And Developments In Electric Vehicles**”



” organized by Department of Electrical Engineering, National Institute of Technology, Manipur, Imphal, India, during 25<sup>th</sup> -29<sup>th</sup> October, 2021.

5. Delivered an expert talk on “**Basics of Power Electronics and their Applications in Electric Vehicles**” in one week Short Term Training Program on “*Overview of Power Electronics converters, controls and applications* under National Education Policy (NEP-2020)” organized by Department of Electrical Engineering, National Institute of Technology, Manipur, Imphal, India, during 5<sup>th</sup> -9<sup>th</sup> October, 2021.

### Awards/Honours

1. **Best Paper Award:** for K. Kumar, “Performance Analysis of onboard GaN-based Synchronous Rectifier used in Dynamic Wireless Charging System for Electric Vehicles” in IEEE International Conference on Smart Technologies for Power, Energy and Control (STPEC 2021), Bilaspur, India, 19-22, Dec. 2021, pp.1-6.

### Workshop/STTP/Industrial Training /Seminar/Conference attended

1. Attended ATAL sponsored FDP on Electric transportation infrastructure for E-mobility in India [online] which was conducted by NIT Warangal from 2<sup>nd</sup> Aug. 2021- 6<sup>th</sup> Aug. 2021.

### Workshop/STTP/Industrial Training /Seminar/Conference Organized

2. Organized one week AICTE Sponsored FDP on “**Management of Intellectual Property Uncertainty in Designing and Manufacturing for Electric Vehicle Systems**” as *Co-ordinator*, Department of Electrical Engineering, National Institute of Technology, Manipur, Imphal, India, during 21<sup>st</sup>-25<sup>th</sup> Feb., 2022 (Participants =110).
2. Organized one week ATAL Sponsored FDP on “**Emerging Trends and Developments in Electric Vehicles**” as *Co-ordinator*, Department of Electrical Engineering, National Institute of Technology, Manipur, Imphal, India, during 25<sup>th</sup>-29<sup>th</sup> October, 2021 (Participants =129).
3. Organized one week Short Term Training Program on “*Overview of Power Electronics converters, controls and applications* under National Education Policy (NEP-2020)” as *Co-ordinator*, Department of Electrical Engineering, National Institute of Technology, Manipur, Imphal, India, during 5<sup>th</sup> -9<sup>th</sup> October, 2021 (Participants =66).

## 4.4 DEPARTMENT OF CIVIL ENGINEERING

### Academic Department

Name of the Department : Civil Engineering

Head of Department : Dr. Ng Romeji singh

### Brief introduction of the Department

The Department of Civil Engineering was established in the year 2013. It is a full-fledged academic department for emerging Civil Engineers. The Department provides outstanding teaching and research environment. The Department offers for Admission in 4 years B.Tech. course with an intake of 30 students. The Department has an objective to produce quality engineers to meet the ever-growing demand for technical manpower in the Civil Engineering arena. The Ministry of Human Resources Development India recognized the department and funded NIT Manipur.

### Highlight of Research Activities

The faculties of Department of Civil Engg, NIT Manipur has been conducting sponsored project from Govt./Semi Govt such as DST, NECTAR, ISRO, SERB, PHRI etc from the year 2015 till date.

### Faculty Details (Regular): 06

SL. No	Name of the faculty	Designation	Qualification	Email
1.	Dr. P. Albino Kumar	Associate Professor	PhD (IIT Guwahati)	albino@nitmanipur.ac.in
2.	Dr. Bakimchandra Oinam	Associate Professor	PhD (Stuttgart Univ. Germany)	bakim@nitmanipur.ac.in
3.	Dr. Thiyam Tamphasana Devi	Assistant Professor	PhD (IIT Guwahati)	tamphasana@nitmanipur.ac.in
4.	Dr. Ng. Romeji Singh	Assistant Professor	PhD (IIT Roorkee)	romeji@nitmanipur.ac.in
5.	Dr. M. Sunil Singh	Assistant Professor	PhD (NIT Silchar)	mayengbamsunil5@gmail.com
6.	Dr. Khwairakpam Sachidananda	Assistant Professor	PhD (IIT Guwahati)	khsachidananda@gmail.com

### Faculty Details (m,kContractual): 03

SL. No	Name of the faculty	Designation	Qualification	Email
1.	Dr. Waikhom Victory	Assistant Professor	PhD (NIT Silchar)	waikhomvictory@gmail.com
2.	Mr. Maisnam Nongthouba	Lecturer	M.Tech	nongthouba@gmail.com
3.	Mrs. Pipileima Sarungbam	Lecturer	M.Tech	spipileima@gmail.com

**Support staff (Contractual): 05**

SL. No	Name of the Staff	Designation	Qualification	Email
1.	Ingudam Bigyananda Singh	Technical Assistant	M.Tech	ibigyananda@gmail.com
2.	Koroungamba Laishram	Technical Assistant	Pursuing PhD	koroulai@gmail.com
3.	Polem Jesiada Devi	Technical Assistant	B.Tech	jesiadapolem@gmail.com
4.	Nairoibam Bidyamani Chanu	Technical Assistant	B.Tech	naoroibambidyamani@gmail.com
5.	Khongbantabam Jayalalita Devi	Technical Assistant	Pursuing M.Tech	jayakhong@gmail.com
6.	Mr. Ayekpam Bijen Singh	Lab Attendant	Graduate	

**Teacher Trainees' Details: 01**

Sl. No	Name of staff	Designation	Qualification	Email
1.	Mr. Nabojit Sarkar	Teacher Trainee	M.Tech	nbjt17.11@gmail.com

**Number of Students (2021-22) in BTech/MTech/PhD/MSc (Whichever is offered):**

Name of the Course	1st Year	2nd year	3rd year	4th year	Total
B.Tech	35	32	25	28	88
M.Tech	20	14	NA	NA	34

**Ph.D. Program:**

Details	2021-22
No. of full time	16
No. of part time	05
Total	21
Degree awarded	01

**Faculty Visited Abroad: NIL****Research Information****Sponsored Research projects from Govt. /Semi. Government Agencies (attached additional sheet giving detailed information): 08**

Sl No.	Title of the Project (Principal Investigator/ Focal)	Sanction Amount (Rs)/Date/Period	Sponsoring Organization / Agency
1	Adaptive Water Balance Schematization at Sub-Basin Scale for Dynamic Climatic Variations in Manipur IHR (PI: Dr. Ngangbam Romeji, Asst Professor)	64,46,503 /- 2019→	Dept of Science & Technology (DST), Govt. of India, Strategic Programmes, Large Initiatives and Coordinated Action Enabler (SPLICE) Divn., Climate Change Programme (CCP) – HICAB
2	Construction of Low Cost Water Treatment Plan based on roughing & biosand filters for Lamsang Villages under, Imphal West (PI: Dr. Potsangbam Albino Kumar, Associate Professor)	17,60,000 /- 2020→	North East Centre for Technology Application & Reach (NECTAR), Autonomous Body under the Department of Science & Technology (DST), Govt. of India

Sl No.	Title of the Project (Principal Investigator/ Focal)	Sanction Amount (Rs)/Date/Period	Sponsoring Organization / Agency
3	Computational Fluid Dynamics Modelling for Optimization of Sedimentation Tanks (PI: Dr. Thiyam Tamphasana Devi, Asst Professor)	30,32,820/- 2021→	Dept of Science & Technology (DST) – Science & Engineering Research Board (SERB), Govt. of India
4	Flood Early Warning Systems (FLEWS) – Manipur# (PI/Focal: Dr. Ngangbam Romeji, Asst Professor)	under initiation	Indian Space Research Organization (ISRO) – NESAC – North Eastern Council (NEC) Joint Venture
5	Development of amine based polymer adsorbent for defluoridization of drinking water (PI: Dr. Potsangbam Albino Kumar, Associate Professor)	3 Years	Department of Science and Technology, Ministry of Science and Technology, Government of India
6	Land degradation risks assessment and monitoring in Manipur, India: a multi-scale approach (PI : Dr. Bakimchandra Oinam, Associate Professor)	2015-2016	Science and Engineering Research (SERB)
7	Public Health Care System Facilities and Spatio-Temporal Disease Mapping and Assessment using Geospatial (GIS and GPS) Technology in Manipur, India. (PI : Dr. Bakimchandra Oinam)	2015-2016	PHRI Research Grant 2015-16 (Public Health Research Initiative), PHFI (Public Health Foundation of India)
8	EOAM-Hydrological Impact Assessment with Climate & Land-use Change Dynamics of Loktak Lake Sub-basin, Manipur. (PI: Dr. Ngangbam Romeji, Asst Professor, Associate Professor)	2015-2016	ISRO (Indian Space Research Organization)/ NESAC (North Eastern Space Applications Centre)

## Patent Details if any : NIL

## Publication in Journals (2021-22)

1. Victoria N, Romeji, Ng., and Singh, K.S. (2022)\*. “Performance of calibrated SWAT hydrological model of partially–gauged Nambul river urbanized catchment in Manipur IHR, India”, Asia–Pacific Journal of Science and Technology (Asia Pac J. Sci. Technol.), APST-D-22-00083, Khon Kaen, Thailand, 40002. [\*Accepted for Publication]
2. Soibam Sangeeta, **Thiyam Tamphasana Devi**, Potsangbam Albino Kumar (2021). Assessment of Surface properties of Benincasa hispida and Cucurbita peels for Chromium uptake, Natural Volatile and Essential Oils, 8(5): 8009-8018.
3. Kumar, R., Mayengbam, S.S. Enhancement of the Thermal Durability of Fly Ash-Based Geopolymer Paste by Incorporating Potassium Feldspar. J. Inst. Eng. India Ser. A 102, 175–183 (2021). <https://doi.org/10.1007/s40030-020-00498-6>
4. Nameirakpam Momo Singh and Thiyam Tamphasana Devi (2022). Assessment of land surface temperature and carbon sequestration using remotely sensed satellite data in the Imphal-West district, Manipur, India, Journal of Earth System Science (accepted for publication and in press)
5. Kirpa Hirom and Thiyam Tamphasana Devi (2022). Application of Computational Fluid Dynamics in Sedimentation Tank Design and Its Recent Developments: a Review, Water, Air & Soil Pollution, Springer Nature 233, 22: 1-26. <https://doi.org/10.1007/s11270-021-05458-9>
6. Sarungbam Pipileima (2021). Fluoride adsorption by chloride doped polyaniline in continuous

column mode operation, Natural volatile and essential Oils, 2021

7. Sarungbam Pipileima (2021). Kinetics Isotherm and Thermodynamics studies of Fluoride uptake by Polyaniline doped chloride, International journal of Mechanical engineering, Vol.6(3), December 2021.

### **Publication in Conferences (2021-22) : 20**

1. Ngangbam ROMEJI, Mukesh Kumar YADAV, Vicky ANAND, Asanatomba SAPAM, Sweetie YUMNAM, and Irom ROYAL. (2022). “Hydraulic Modelling of Sediment Transport for Environmentally Viable Sand–Gravel Mining in Thoubal River, Manipur IHR”\*, Olympic of Civil Engineering–CECAR9 (Civil Engineering Conference in the Asian Region), International Conference of ACECC (Asian Civil Engineering Coordinating Council), ICE(I), September 21 – 23, 2022, Goa, India. [\*paper accepted ].
2. Victoria Ningthoujam, Romeji, Ng., and L. Bilashini Chanu (2022). “Sediment Yield in an Urbanized River Basin: A Case Study of Nambul River, Manipur, India”, Proceedings, 39th IAHR World Congress (COPE Peer reviewed, SCOPUS indexed), 19→24 June, 2022, Granada, Spain, pp.846–853.
3. Romeji, Ng., Mukesh Kumar Yadav, Gunadas Singh Keisam, Jayalaxmi Ngasepam and Khuraijam Susilchandra (2022). “Adaptive Hydro-Climatic Analysis for Restoration of a Biodiversity Hot Spot Ungauged River System of Manipur IHR, India”, Proceedings, 39th IAHR World Congress (COPE Peer reviewed, SCOPUS indexed), 19→24 June, 2022, Granada, Spain pp.1965–1973.
4. Kumar, R., Singh, M.S. (2022). Effect of Na<sub>2</sub>O Content on Ground Granulated Blast Furnace Slag Incorporated Fly Ash-Based Geopolymer Pastes. In: Verma, P., Samuel, O.D., Verma, T.N., Dwivedi, G. (eds) Advancement in Materials, Manufacturing and Energy Engineering, Vol. II. Lecture Notes in Mechanical Engineering. Springer, Singapore.
5. Kumar, R., Vigvesh, Singh, M.S. (2021). Effect of SiO<sub>2</sub> on Rice Husk Ash-Based Geopolymer Composites at Ambient Curing Conditions. In: Biswas, S., Metya, S., Kumar, S., Samui, P. (eds) Advances in Sustainable Construction Materials. Lecture Notes in Civil Engineering, vol 124. Springer, Singapore. [https://doi.org/10.1007/978-981-33-4590-4\\_57](https://doi.org/10.1007/978-981-33-4590-4_57).
6. Kumar, R., Singh, M.S. (2022). Effect of Blast-Furnace Slag on Geopolymer Paste accepted in the 1st International Conference on Contemporary Innovations in Mechanical Engineering (CIME) 2022 for publication in AIP Conference Proceedings indexed in Web of Science.
7. Rajkumar Manisana and Sunil Singh Mayengbam (2021). Dynamic Amplification of Base Isolated R.C. Frame Building. Recent Advancements in Construction Materials and Structure, ICCMS-2021.
8. Koroungamba Laishram, P. Albino Kumar and Thiyam Tamphasana Devi (2022). Effect of channel slope and roughness on hydraulic jump in open channel flow, IOP Conf. Series: Earth and Environmental Science, 958: 012014. IOP Publishing. <https://doi.org/10.1088/1755-1315/958/1/012014>.
9. Nameirakpam Momo Singh and Thiyam Tamphasana Devi (2022). International Conference on Technological Interventions for Sustainability organized by Motilal Nehru National Institute of Technology Allahabad, Prayagraj-211004 (India) and Universiti Sains Malaysia, April 14-16, 2022, Allahabad. pp. 106

10. KirpaHirom, Mk Raeesh and ThiyamTamphasana Devi (2021). CFD study on finding optimum number of inclined plates and settling efficiency in a novel sedimentation tank (lamella clarifiers) of wastewater treatment unit, 48th National Conference on Fluid Mechanics and Fluid Power (FMFP) December 27-29, 2021, BITS Pilani, Rajasthan, India.
11. KoroungambaLaishram, P. Albino Kumar and ThiyamTamphasana Devi (2021). Effect of channel slope and roughness on hydraulic jump in open channel flow, The 7th International Conference on Water Resource and Environment (WRE 2021), 1-4 November 2021, China.
12. Soibam Sangeeta, Thiyam Tamphasana Devi, Potsangbam Albino Kumar (2021). Assessment of Surface properties of Benincasahispidia and Cucurbita peels for Chromium uptake, International Virtual Conference on Research Trends in Engineering & Management, August 20-21, 2021, Bangalore, India. pp.53
13. Kirpa Hirom, Thiyam Tamphasana Devi (2021). CFD Simulation for Optimum gap between the plates in sedimentation tank retrofitted with inclined plates, International Virtual Conference on Innovative trends in Hydrological and Environmental Systems, 28-30 April 2021, NIT Warangal, India. pp.136
14. Ningombam Bishwajit Singh, Thiyam Tamphasana Devi, Kirpa Hirom, Bimlesh Kumar (2021). CFD Simulation of Local Scour around Bridge Pier, International Virtual Conference on Innovative trends in Hydrological and Environmental Systems, 28-30 April 2021, NIT Warangal, India. pp.134
15. Koroungamba Laishram, Thiyam Tamphasana Devi, Ningombam Bishwajit Singh (2021). Experimental Comparison of Hydraulic Jump Characteristics & Energy Dissipation between Sluice gate and Radial gate, International Virtual Conference on Innovative trends in Hydrological and Environmental Systems, 28-30 April 2021, NIT Warangal, India. pp.206
16. Krison Thokchom Singh, Nameirakpam Momo Singh, Thiyam Tamphasana Devi (2021). A remote Sensing, GIS based study on LULC change detection by different methods of classifiers on Landsat data, International Virtual Conference on Innovative trends in Hydrological and Environmental Systems, 28-30 April 2021, NIT Warangal, India. pp.21
17. Yumnam Lanchenba Singh, Nameirakpam Momo Singh, Thiyam Tamphasana Devi (2021). Estimation of soil hydraulic properties in flood prone zone of NIT Manipur Campus using Mini Disc Infiltrometer, International Virtual Conference on Innovative trends in Hydrological and Environmental Systems, 28-30 April 2021, NIT Warangal, India. pp.292
18. Irungbam Jina, Nameirakpam Momo Singh, Thiyam Tamphasana Devi (2021). Determination of Infiltration Rate in Imphal west District, Manipur: Field Study, International Virtual Conference on Innovative trends in Hydrological and Environmental Systems, 28-30 April 2021, NIT Warangal, India. pp.294
19. Sachidananda Kh (2021). Comparative study of concrete made using rice husk ash, straw ash and bamboo leaf ash, Indian Engineering Congress, 15-16 Dec 2021.
20. Sachidananda Kh (2022). A study on square and rectangular hollow steel section subjected to torsion, 2nd International Conference on emerging global trends in engineering and technology (EGTET), 21-23 April 2022.



### **Publication in books/ book chapters (2021-22): 7**

1. Book Title: Advanced Building Materials: Geopolymers, by BFC Publications. ISSN 9789355096739. Published on 2nd April 2022.
2. Yumnam Lanchenba Singh, Nameirakpam Momo Singh, Thiyam Tamphasana Devi (2022) – “Estimation of soil hydraulic properties in flood prone zone of NIT Manipur Campus using Mini Disc Infiltrometer”, Innovative Trends in Hydrological and Environmental Systems, Lecture Notes in Civil Engineering (eds. A.K Dikshit et al.), Springer Nature, Singapore. (In press and available in June 2022)
3. Koroungamba Laishram, Thiyam Tamphasana Devi, Ningombam Bishwajit Singh (2022) – “Experimental comparison of Hydraulic Jump characteristics & Energy Dissipation between Sluice gate and Radial gate”, Innovative Trends in Hydrological and Environmental Systems, Lecture Notes in Civil Engineering (eds. A.K Dikshit et al.), Springer Nature, Singapore. (In press and available in June 2022)
4. Irungbam Jina, Nameirakpam Momo Singh, Thiyam Tamphasana Devi (2022). “Determination of Infiltration Rate in Imphal West District, Manipur: Field study”, Innovative Trends in Hydrological and Environmental Systems, Lecture Notes in Civil Engineering (eds. A.K Dikshit et al.), Springer Nature, Singapore. (In press and available in June 2022)
5. Krison Thokchom Singh, Nameirakpam Momo Singh, Thiyam Tamphasana Devi (2022). “A remote sensing, GIS based study on LULC change detection by different methods of classifiers on Landsat data”, Innovative Trends in Hydrological and Environmental Systems, Lecture Notes in Civil Engineering (eds. A.K Dikshit et al.), Springer Nature, Singapore. (In press and available in June 2022)
6. Nameirakpam Momo Singh, Thronlem Winkangshu, Thiyam Tamphasana Devi (2022). “Comparison of Simple and Modified SCS-CN in Runoff Prediction in a Highly Flood Prone Zone”, Sustainable Water Resources Management, Advances in Sustainability Science and Technology, (eds. R.K Bhattacharjya et al.), Springer Nature, Singapore. (In press and available in June 2022)
7. Pradyumna Kumar Behera, Thiyam Tamphasana Devi (2022). “Study on Impact of Urbanization by SWAT MODEL in Iril River, North EAST India”, Hydrological Modelling, Water Science and Technology Library (eds. Ramakar Jha et al.), Springer Nature (USA), 109: 385 - 393. [https://doi.org/10.1007/978-3-030-81358-1\\_29](https://doi.org/10.1007/978-3-030-81358-1_29)

### **Short Term Course/ Workshop/Seminar/ Conference Conducted by the Department:**

1. Consultation Workshop & Stakeholders Interaction Meet on “State Action Plan on Climate Change of Manipur IHR (SAPCC) Phase-II on Water Resources”, on Tuesday 23rd November, 2021, Sponsored by: Directorate of Environment & Climate Change, Govt of Manipur.
2. Workshop under “Unnat Bharat Abhiyan (UBA)”, at Chandel, Chandel district, Manipur, 01/2022.
3. Workshop under “Unnat Bharat Abhiyan (UBA)”, at Tamenglong, Tamenglong district, Manipur, 9th April, 2022.

4. One week short term course on “Basic Concept of Structural Design & Hands On Training Session For Design Softwares”. October 11–15th 2021.
5. Organized a Five days short term course under national Education Policy on the topic “Technical writing in research & funding opportunities” organized by Department of Civil Engineering, NIT Manipur during October 4-8, 2021
6. Organized a Five days short term course under National Education Policy on the topic “Basic Civil Engineering Laboratory Experiments and its Opportunities in Research” organized by Department of Civil Engineering, NIT Manipur during 23 – 27 August 2021

### Internship or Industrial Visits:

1. Field practical Internship Site visit for B.Tech 6th sem and M.Tech 2nd sem on Saturday, the 13th February, 2021 at Imphal and Chakpi river, Serou, Kakching district, Manipur.
2. Field Practical Internship for for B.Tech 6th sem and M.Tech 2nd sem on Hydrographic Survey & Hydrometry at Thoubal River, Shangkai, Ukhrul district, on 16th March, 2022.
3. Field internship visit for B.Tech 4th and 6th Semester students under NorthEast Frontier Railway (NFR) at (i) Imphal Railway Station, Malom/Konthoujam, Imphal (W), (ii) Railway Pier Bridge Site, Noney, and (iii) Railway Tunnel No. 12 Construction site, Sangaithel, Kangpokpi district, between 15/12/2021 to 15/01/2022.

### Name of B.Tech students who graduated in 2021-22: 28

Sl No.	Enrolment	Name
1	18101001	Ankit Patel
2	18101002	Ailinda Yumnam
3	18101003	Ch Neitinlhing Mate
4	18101004	Deepak Kumar Prasad
5	18101005	Dinesh Bhupathi
6	18101006	Jenin Khomdram
7	18101007	Nandyala Dinesh
8	18101008	Khaidem Kison Meitei
9	18101009	H Pinky Ruth Chanu
10	18101010	Moirangthem Edison Singh
11	18101011	Onam Nitik
12	18101012	Ng Vapulou Zho
13	18101013	Onkar Kumar Gupta
14	18101014	Paomounsang Khongsai

Sl No.	Enrolment	Name
15	18101015	Pushpa Kumari
16	18101017	Rahul Kumar
17	18101018	Taapaash Chanambam
18	18101019	Rajeev Kumar
19	18101020	Thangjam Satrajit Singh
20	18101022	Veineivah Misao
21	18101023	Veer Sarvottam Singh
22	18101024	Wahengbam Naothoi
23	18101025	Vikram Kumar
24	18101026	Yameirar Varam
25	18101027	Vishal Gangwar
26	18101028	Yanglem Urmila Devi
27	18101029	Yumnam Yoihensana
28	18101030	Ravi Kumar



**Name of MTech students who graduated in 2021-2022: 15**

Sl No.	Enrolment No.	Name	8	20201008	Chesabam Sonali
1	20201001	Akhil Kadari	9	20201009	Suniratnam Chongtham
2	20201002	Gorthi Sreekanth	10	20201010	Shylvia paonam
3	20201003	Kirthivasan S	11	20201011	Jodaraj Achom
4	20201004	Saroja Potsangbam	12	20201012	Neetu Rajkumari
5	20201005	Moirangthem Siman	13	20201013	Sochanphi
6	20201006	Perin Mutum	14	20201014	Anamika Rajak
7	20201007	Singam Aheiba	15	20201015	Suraj Chingkhmayum

**Other Activities:**

1. Details of NEP Activity conducted by the Department in 2021-22:
2. Details of faculty Achievement in 2021-22:
3. Details of Students Achievement in 2021-22:
4. Details of Awards/ Recognition received by Faculty/Staff/Students in 2021-22:
5. Details of contribution to the society:
6. Steps taken for popularisation of Science and Technology among the students of Manipur

## 4.5 DEPARTMENT OF MECHANICAL ENGINEERING

### Academic Department

Name of the Department : Mechanical Engineering  
Head of Department : Dr. Huirem Neerajan Singh

### Brief Introduction of the Department

With the aim of catering to the need of the nation in the field of technological advancement, the Department of Mechanical Engineering was established in the year 2013. Our department is committed to the development of humankind through scientific and intellectual knowledge. Through reformist mixing of various culture, race and ethnicity, we seek to develop a state of art learning environment for our Undergraduate, Postgraduate and PhD scholars. We enjoy the company of highly qualified faculties and state of the art laboratories to foster the need of B. Tech Students, M. Tech. Scholars and PhD researchers. Several government agencies have sponsored various projects at our department enhancing the academic and research capabilities of our associates. Over the years we have developed a world-class infrastructure for the study of Thermal & Fluid Flow, Manufacturing Science, and Design Engineering. We warmly invite any query and thank you for visiting us.

### Highlight of Research Activities

The department has various research domains in Mechanical Engineering such as: Thermal-Fluids Flow, Design and Manufacturing. Some of the core research areas include: *Fluid flow and Heat Transfer, CFD, Combustion, Renewable Energy and Alternate Fuels, Rotor Dynamic, Non-Traditional Machining, Composite Materials, foundry and Metal working related Studies, etc.*

### Faculty Details (Regular): 04

Sl. No.	Name of the faculty	Designation	Qualification (with last Institution)	Email
1.	Dr. Rajesh Kumar Bhushan	Professor	Ph.D. Mechanical Engineering (Shri Mata Vaishno Devi University, Katar J &K)	rkbnitm@gmail.com
2.	Dr. Dushyant Singh	Assistant Professor	Ph.D. Mechanical Engineering (IIT Delhi)	dushyant7raghu@gmail.com
3.	Dr. Anil Kumar Birru	Assistant Professor	Ph.D. Mechanical Engineering (IIT Roorkee)	anilbirru@gmail.com
4.	Dr. Huirem Neerajan Singh	Assistant Professor	Ph.D. Mechanical Engineering (NIT Durgapur)	nrjan.h@gmail.com
5.	Dr. Sabindra Kachhap	Assistant Professor	Ph.D. Mechanical Engineering (NIT Patna)	sabindra.05@gmail.com

6.	Dr. Prabhat Kumar	Assistant Professor	Ph.D. Mechanical Engineering (IIT Guwahati)	ysprabhat.pamho@gmail.com
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### Faculty Details (Contractual): 03

Sl. No.	Name of the Faculty	Designation	Qualification (with last Institution)	Email
1.	Dr. KhundrakpamNimo Singh	Assistant Professor	Ph.D. Mechanical Engineering (IKG PTU)	nimspn@gmail.com
2.	Dr. Maibam BindyaDevi	Assistant Professor	Ph.D. Mechanical Engineering (NIT Manipur)	maibambindya@gmail.com
3.	Dr. Thokchom Subhaschandra Singh	Assistant Professor	Ph.D. Mechanical Engineering (NIT Manipur)	th.subhas143@gmail.com

### Non-Teaching Staff (Contractual): 06

Sl. No.	Name of the Staff	Designation	Qualification (with last Institution)	Email
1.	Mr. Laishram Birjit Singh	Technical Assistant	M.Tech. Thermal & Fluids Engineering(NIT Manipur)	birjitlai@gmail.com
2.	Mrs. Thiyam Lakshmi Devi	Technical Assistant	M.Tech. Thermal & Fluids Engineering (NIT Manipur)	laxmidevithiyam@gmail.com
3.	Mr. Oinam AdeepMeitei	Technical Assistant	B.Tech. Mechanical Engineering (VTU Karnataka)	adeepoinam@gmail.com
4.	Mr. Takhellambam Satyajit Singh	Technical Assistant	M.Tech. Thermal & Fluids Engineering (NIT Manipur)	satyajitsingh558@gmail.com
5.	Mr. Hidangmayum Manorajan Sharma	Lab Attendant	Diploma in Tools & Die Making (NTTC Nagaland)	bungobi.sharma@gmail.com
6.	Mr. Thokchom Kamaljit Singh	Lab Attendant	ITI Course (Govt. ITI Takyel)	kamaljitthokchom39@gmail.com

### Trainee Teachers: 01

Sl. No.	Name of the Faculty	Designation	Qualification(with last Institution)	Email
1.	Mr. Ashutosh Kumar Singh	TraineeTeacher	M.Tech. (IIT Guwahati) Ongoing Ph.D. (IIT Guwahati)	ashutosh317singh@gmail.com

## ACADEMIC ACTIVITIES

### Students Enrolled:

Course	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	Total
B.Tech	31	24	23	26	104
M.Tech	8	5	NA	NA	13

### PhD Programme

	2021-22
No. of Full Time	21
Of Part Time	01
Total	22
Degree awarded during 2021-22	02

### Research Information

#### Sponsored Research Projects from Govt./Semi Govt.

Sl. No.	Name of the Project	Funding Agency	Project Amount	Project PI
1	Novel cooling techniques for substrate exposed to very high temperature	CORE RESEARCH GRANT (SERB) DST – Govt. India	Rs. 47, 15, 832/-	Dr. Dushyant Singh
2	Effect of thickness on retention, comfort & Strength of 3D printed mouthguard-A pilot Study	Regional Institute of Medical Sciences- An Autonomous Institute under the Ministry of Health & Family Welfare, Government of India	Rs.55,000/- (Fifty five thousand rupees only)	Dr. Amandeep Kaur, Co-PIs 1.Dr. Anil Kumar Birru 2.Dr. Deepak B.S 3.Dr.Premalata Devi 4. Dr. SH Priyadarshini

### Patent Details, if any:

1. Dr. M Muthukumar, Dr. N Rengarajan, Dr. P Karthikeyan, Dr. A.P. Senthil Kumar, **Dr. Thokchom Subhaschandra Singh**, Dr. Tikendra Nath Verma. *3-2-1 Serpentine Flow Channel of Fuel Cells*, Indian Patent No. 354212-001, Granted and Published on 3<sup>rd</sup> December 2021.
2. **Dr. Anil Kumar Birru**, Amos Thounaojam, Dr. Amandeep Kaur and **Dr. Khundrakpam Nimo Singh** (2021). *Fabrication of Dental crown pattern mould with polyactic acid using 3D printing*. Indian Patent application no. 202131054403, Filed November 25, 2021 and Issued December 10, 2021.

## Publication in Journals (April 2021 – March 2022)

1. **P. Kumar** and R. Tiwari. Finite element modelling, analysis and identification using novel trial misalignment approach in an unbalanced and misaligned flexible rotor system levitated by active magnetic bearings. *Mechanical Systems and Signal Processing*, Vol. 152, p. 107454, 2021. **(SCI)**
2. R. Tiwari and **P. Kumar**. An innovative virtual trial misalignment approach for identification of unbalance, sensor and active magnetic bearing misalignment along with its stiffness parameters in a magnetically levitated flexible rotor system. *Mechanical Systems and Signal Processing*, vol. 167, p. 108540, 2022. **(SCI)**
3. **Dushyant Singh**, Ayush kumar Rao and Udayraj. Effect of taper and perforation on heat transfer coefficient of a passive horizontal heat sink. *Heat Transfer Engineering*, Vol. 44 (7): 2022. **(SCI)**
4. **Rajesh Kumar Bhushan**. Effect of SiC particle size and weight % on Mechanical Properties of AA7075 SiC composite. *Advanced Composites and Hybrid Materials*, Springer, Vol 4, pp 78-85, 2021. **(SCI)**
5. Deepak Sharma, **Rajesh Kumar Bhushan**. Microstructure Analysis of AA6082/Si3N4 and AA6082/SiC Composites. *Aircraft Engineering and Aerospace Technology*, Emerald, Vol. 94 No. 2, pp. 154-162. **(SCI)**
6. **Rajesh Kumar Bhushan**. Effect of Tool wear on Surface Roughness in Machining of AA7075/ 10wt.% SiC composite, *Composites Part C*, Elsevier, Vol 8, Pp. 100254 **(SCOPUS)**
7. **Ashutosh Kumar Singh**, Kuldeep Singh, **Dushyant Singh**, and Niranjana Sahoo, N. “Large Eddy Simulations for Film Cooling Assessment of Cylindrical and Laidback Fan-Shaped Holes With Reverse Injection.” *ASME. J. Thermal Sci. Eng. Appl.* June 2021; 13(3): 031027. **(SCI)** <https://doi.org/10.1115/1.4048679>
8. Hitesh Sharma, **Dushyant Singh**, and **Ashutosh Kumar Singh**. “Large Eddy Simulation of Film Cooling Over a Flat Plate in Supersonic Flow.” *ASME. J. Thermal Sci. Eng. Appl.* August 2021; 13(4): 041019. **(SCI)**. <https://doi.org/10.1115/1.4049342>.
9. **Thokchom Subhaschandra Singh**, Upendra Rajak, Abhishek Dasore, M Muthukumar, Tikendra Nath Verma. Performance and ecological parameters of a diesel engine fueled with diesel and plastic pyrolyzed oil (PPO) at variable working parameters. *Environmental Technology and Innovation*, Vol. 22, Pp. 101491 **(SCI)**
10. Jayashri N Nair, **Thokchom Subhaschandra Singh**, Vallapudi Dhana Raju. Effect of addition of bio-additive clove oil to ternary fuel blends (Diesel-Biodiesel-Ethanol) on compression ignition engine, *Journal of Physics: Conference series*, IOP Science Vol. 2070, Pp. 012212 **(SCOPUS)**
11. **Thokchom Subhaschandra Singh**, Upendra Rajak, Tikendra Nath Verma, Prerana Nashine, Hassan Mehboob, A Muthu Manokar, Asif Afzal. Exhaust emission characteristics study of light and heavy-duty diesel vehicles in India, *Case studies in Thermal Engineering*, Elsevier, Vol 29 Pp. 101709 **(SCI)**
12. Kumara Swamy Pulisheru, **Anil Kumar Birru**, Uday Shanker Dixit, Effect of FeNb on microstructure and mechanical properties of Al-Cu-Ni alloy, *Materials Research Express*, IOP publisher, Vol. 9, Pages 1–15, 2022, **(SCI)**
13. Rosang Ponggen, **Anil Kumar Birru**, P. Parthiban, Optimal design of die casting process parameters of A713 cast alloy with grain refinement by using genetic algorithm approach for automobile Industries, *International Journal Heavy Vehicle Systems*, Inder Science publisher, Vol. 29, No. 2, 2022, pages 197-211, **(SCI)**
14. ShanthiRaju Meenuga, **Anil Kumar Birru**, Praveen Kumar Bannaravuri, Effect of cavitation and spallation on ribbon morphology of Fe73.5Si13.5B9Cu1Nb3 alloy in planar flow melt spinning process, Elsevier Publisher, Vol. 47, pages. 6724-6727, 2021, **(Scopus)**
15. Kumara Swamy Pulisheru, **Anil Kumar Birru**, Effect of pouring temperature on hot tearing susceptibility of Al-Cu cast Alloy: Casting simulation, Elsevier Publisher, *Materials Today: Proceedings*, Vol. 47, Pages 7086-7090, 2021, **(Scopus)**
16. Maibam Bindya Devi, **Anil Kumar Birru**, Praveen Kumar Bannaravuri, The recent trends of EDM

applications and its relevance in the machining of aluminium MMCs: A comprehensive review, Elsevier Publisher, Vol. 47, Part 19, 2021, Pages 6870-6873(**Scopus**)

17. Sameer M. D, **Anil Kumar Birru**, Selection of friction stir welding tool rotational speed for joining dual phase DP600 steel sheets—an experimental approach, Journal of Adhesion Science and Technology, Taylor & Francis publisher, Volume 35, Issue 7, Pages (2021), pages, 751-776. (**SCI**)
18. Gadudasu Babu Rao, Praveen Kumar Bannaravuri, R. Raja, K Ch Apparao, P Srinivas Rao, T Srinivasa Rao, **Anil Kumar Birru**, R. Malkiya Rasalin Prince, Impact on the microstructure and mechanical properties of Al-4.5Cu alloy by the addition of MoS<sub>2</sub>, International Journal of Lightweight Materials and Manufacture, Elsevier Publisher, Volume 4, Issue 3, September 2021, Pages 281-289. (**SCI**)
19. Appa Rao, K.C., **Anil Kumar Birru**., Bannaravuri, P.K. and Francis, E.D. (2022), “Porosity formation studies in high pressure die castings of Al-9Si-3Cu alloy based on Taguchi method”, International Journal of Structural Integrity, Emerald’s publisher, Vol. 13 No. 1, (2022) pp. 78-91. <https://doi.org/10.1108/IJSI-06-2020-0056>, (**Scopus**)
20. K Ch Apparao, Praveen Kumar Bannaravuri, Kumar Swamy Pulisheru, ED Francis, Kalakanda Alfred Sunny, Gadudasu Babu Rao, P Freedon Daniel, **Anil Kumar Birru**, Effect of novel grain refiner and Ni alloying additions on microstructure and mechanical properties of Al-Si-Cu HPDC castings—optimization using Multi Criteria Decision making, Materials Science-Poland, Walter University Publisher, Volume 40 (2022), pages, 9 – 24, **SCIE**
21. Sameer, M D; Birru, Anil Kumar, Effect of Tool Tilt Angles on Mechanical and Microstructural Properties of Friction Stir Welding of Dissimilar Dual-Phase 600 Steel and AA6082-T6 Aluminum Alloy, SAE International Journal of Materials & Manufacturing; Society of Automobile Engineering publisher, Warrendale Vol. 14, (2021): 45-61. (**Scopus**)
22. Sameer, M., Anil Kumar Birru, Srinu, G. and Naresh, C., “Effect of process parameters during electric discharge machining of maraging steel and optimization using Taguchi-DEAR method”, World Journal of Engineering, Emerald’s publisher, Vol. (2021) ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/WJE-07-2021-0434> (**ESCI and Scopus**)

### Publication in Conference (April 2021 – March 2022)

1. **Prabhat Kumar** and Rajiv Tiwari; “Identification in a Magnetically Levitated Rigid Rotor System Integrated with Misaligned Sensors and Active Magnetic Bearings”; *16th International Conference on Vibration Engineering and Technology of Machinery*; 16<sup>th</sup>-18<sup>th</sup> December 2021; (**VETOMAC-XVI**); B. M. S. College of Engineering, Bangalore, India.
2. **Prabhat Kumar**, Chingkhomba Arambam, Lourembam Dinesh Singh and Ningthoujam Dingku Singh; “Analyzing the Dynamic Interaction between Unbalance and Crack Responses in a Jeffcott Rotor Supported by Foil Bearings: A Numerical Study”; 5th International Conference on Emerging Trends In Mechanical And Industrial Engineering; 4<sup>th</sup>-5<sup>th</sup> March 2022; (**ICETMIE-2022**); The Northcap University, Gurgaon, Haryana, India.
3. **Ashutosh Kumar Singh, Dushyant Singh** and Niranjana Sahoo “ Effect of various deposition configurations on film cooling characteristics of laidback fan shape hole” 8<sup>th</sup> International Symposium on Advances in Computational Heat Transfer- CHT-21, August 15-19-2021, **Rio de Janeiro-Brazil**.
4. Ashutosh Narayan Singh and **Dushyant Singh** “Large Eddy Simulation of Jet Impingement on Flat Plate Using Sub-Grid Scale Models” 8<sup>th</sup> International Symposium on Advances in Computational Heat Transfer- CHT-21, August 15-19-2021, **Rio de Janeiro-Brazil**.
5. **Ashutosh Kumar Singh, Kuldeep Singh, Dushyant Singh**, “Numerical investigation of flow field and heat transfer characteristics of corrugated channel” *International Conference on Thermo-Fluids and System Design-(ICTFSD 2022) -BIT Ranchi*
6. **Dushyant Singh**, Ayush Kumar Rao and Udayraj “Effect of taper and Perforation on Heat Transfer



Coefficient of a Passive Horizontal Heat sink” 3<sup>rd</sup> International Conference on Recent Advances in Mechanical Infrastructure-ICRAM-2021: 6-8 August, 2021

7. **Ashutosh Kumar Singh**, Kuldeep Singh, Dushyant Singh, Niranjana Sahoo.”Film cooling analysis of ammonia-based aviation fuels in jet engines” Indo-German International Conference on metrology for the development of green hydrogen and renewable fuels in India. 4-6 April 2022. (Virtual Event) **Physikalisch-Technische Bundesanstalt (PTB) Bundesallee 100 38116 Braunschweig, Germany.**
8. Hitesh Sharma, **Dushyant Singh**, and **Ashutosh Kumar Singh** (2021) Numerical Solution of Foreign-Gas Film Cooling in Supersonic Flow. In: Pandey K., Misra R., Patowari P., Dixit U. (eds) Recent Advances in Mechanical Engineering. Lecture Notes in Mechanical Engineering. **Springer, Singapore.**
9. Pabitra Kumar Sahu, **Sabindra Kachhap**, Abhishek Singh and Pranjali Jain, 2021 “Study Of Surface Roughness Properties of Machined Surface on Al Based Metal Matrix Composites By Near-Dry-EDD” Progressive Research in Industrial & Mechanical Engineering, National Institute of Technology Patna, India. (5<sup>th</sup> - 7<sup>th</sup> Aug. 2021)
10. Abhishek MS, **Sabindra Kachhap** and Tikendra Nath Verma. “Validation and optimization of spirulina microalgae biodiesel using different metallic nano- additives numerically” Cotemporary Innovations in Mechanical Engineering. 22-23 April 2022.
11. Libando Sadokpam, Saikhom Suma, **Thokchom Subhaschandra Singh**, Huiem Neeranjan Singh. Oil extraction feasibility test from Heining maru (*Bruce javanica* (L.)) using Soxhlet apparatus: Sustainable approach in biofuel, International Conference on Building a Sustainable Environment (ICBSE 2021), DM University, Imphal, March- April 2021
12. Leitanthem Calvin, Saikhom Suma, **Thokchom Subhaschandra Singh**, Huiem Neeranjan Singh, Nagarajan S. A case study of catalytic converter in understanding pollution from commercial internal combustion engine, International Conference on Building a Sustainable Environment (ICBSE 2021), DM University, Imphal, March- April 2021
13. Tourangbam Rahul Singh, Saikhom Suma, **Thokchom Subhaschandra Singh**, Tikendra Nath Verma. Wood biomass based catalytic material for biofuel production International Conference on Building a Sustainable Environment (ICBSE 2021), DM University, Imphal, March-April 2021
14. Jayashri N Nair, **Thokchom Subhaschandra Singh**, Vallapudi Dhana Raju. Effect of addition of bio-additive clove oil to ternary fuel blends (Diesel-Biodiesel-Ethanol) on compression ignition engine, Second International Conference on Advances in Physical Science and Materials (ICAPSM 2021), 12<sup>th</sup> to 13<sup>th</sup> August 2021, Coimbatore, India
15. P Vicky Kumar, Anil Kumar Birru, Nelson Muthu, Design and Development of Dental Crown using 3D Printing for patient compatibility, National Conference cum Industry meet on Foundry 4.0 - Opportunities and Challenges, February 24-25, 2022, Durgapur-India

### **Publication in books/book chapters (April 2021 – March 2022)**

1. Ashutosh Narayan Singh and **Dushyant Singh** “Flow and Thermal Characteristics of Jet Impingement on a Dimple plate using Large Eddy Simulation”, Recent Advances in Mechanical Infrastructure, **Nature Springer**, Singapore. (2022), Chapter No. = 02 Pp: 17-30.
2. Sahu, P.K. and **Kachhap, S.**, 2022. Powder Mixed Electric Discharge Drilling of Aluminum Based Metal Matrix Composite. In Advancement in Materials, Manufacturing and Energy Engineering, Vol. II (pp. 327-338). **Springer**, Singapore.
3. **Thokchom Subhaschandra Singh**, Tikendra Nath Verma, Langpoklakpam Denin Singh, Upendra Rajak, Prerana Nashine, Anish Khan, Abdullah M Asiri. Case study of non refined mustard oil for possible biodiesel extraction: feasibility analysis, *In Anish Khan (Eds.) Advanced Technology for the conversion of Waste into Fuel and Chemicals*, **Elsevier** (Vol 1: Biological process), 2021
4. Upendra Rajak, **Thokchom Subhaschandra Singh**, Prerana Nashine, Prem Kumar Chaurasiya,

- Abdullah M Khan, Anish, Asiri. Influence of fuel injection pressure for diesel-waste cooking oil cofuel in a research engine, *In Anish Khan (Eds.) Advanced Technology for the conversion of Waste into Fuel and Chemicals*, **Elsevier** (Vol 2: Chemical Process), 2021
5. K. CH. Appa Rao, Praveen Kumar Bannaravuri, **Anil Kumar Birru**, Pulivarti Srinivasa Rao, Gadudasu Babu Rao, D. Arulkirubakaran, Influence of Fly Ash and Cement with Molasses Addition on Moulding Properties in Silica Sand: A Comparison, Recent Advances in Materials and Modern Manufacturing, (2022) pages, 761–770, Part of the **Springer**, Lecture Notes in Mechanical Engineering book series (LNME).
  6. P. Vicky Kumar, **Anil Kumar Birru**, Vinayak Narayan Kulkarni, Reacting Flow Solver for Martian Atmosphere Conditions, Recent Advances in Mechanical Engineering (2021), pages 969–978. Part of the **Springer**, Lecture Notes in Mechanical Engineering book series (LNME).
  7. S. Vijay Prasad, **Anil Kumar Birru**, Solving the Multi-server Queuing Model by Big-M Method, Advances in Engineering Design (2021) pages, 475–480. Part of the **Springer**, Lecture Notes in Mechanical Engineering book series (LNME).
  8. ShanthiRaju Meenuga, **Anil Kumar Birru**, Sowjanya Madireddi, Influence of Vibration in the Nozzle frame on the Ribbon Characterization in Planar Flow Melt Spinning Process, Advances in Micro and Nano Manufacturing and Surface Engineering. **Springer**, DOI : 10.1007/978-981-19-4571-7 (2022).
  9. Kumara Swamy Pulisheru, **Anil Kumar Birru**, Uday Shanker Dixit, Porosity of Al– Cu–Ni Alloy with Addition of FeNb Through Sand and Stir Casting Routes, Advances in Forming, Machining and Automation, **Springer**, Chapter 4, (2022) Pages 1–13, 2022.

### Short Term Course / Workshops / Seminar / Conference conducted by the department (April 2021 – March 2022)

1. Organised a 5 days Short Term Course (Under NEP-2020) on “Applications of Vibration and Heat Transfer in Mechanical Engineering” from 27th October to 31st October 2021 in ME Department by **Dr. Prabhat Kumar as Coordinator**.
2. Organised a 5 days STC on Applications of Vibration and Heat Transfer in Mechanical Engineering during 27/10/21 to 31/10/21 by **Dr. Dushyant Singh as Convener**
3. Organised a 5 days STC on Applications of Vibration and Heat Transfer in Mechanical Engineering during 27/10/21 to 31/10/21 by **Mr. Ashutosh Kumar Singh as Coordinator**
4. Online Faculty Development Program on Green Technology & Sustainability Engineering, 10 – 14 January, 2022 Sponsored by AICTE Training and Learning (ATAL) Academy by **Dr. Sabindra Kachhap**.
5. One-week short term course on Energy from waste: sustainable approaches under NEP 2020 March-April 2021 by **Dr. Huirem Neeranjan Singh as Coordinator** and **Dr. Thokchom Subhaschandra Singh, Dr. Sabindra Kachhap as Convenor**
6. **Dr. Anil Kumar Birru**, Coordinator, NIRF Awareness Workshop for Teaching and Non-teaching staff of Institute- on 25-10-2021



### Internship or Industrial Visits:

Sl. No.	Enrolment Number	Name of the student	Industry/Organisation
1.	20107014	Lenjenthoba Leishangthem	Border Roads Task Force (BRTF), Imphal
2.	20107004	Bonbiaraj Chabungbam	Border Roads Task Force (BRTF), Imphal
3.	20107013	Md Niyaz Sharif	Border Roads Task Force (BRTF), Imphal
4.	20107011	Laishram Rakesh Singh	Border Roads Task Force (BRTF), Imphal
5.	20107005	Lenin Thoudam	Border Roads Task Force (BRTF), Imphal
6.	20107025	Withubou Moita	Border Roads Task Force (BRTF), Imphal
7.	20107018	Thangjam Tenzing	Border Roads Task Force (BRTF), Imphal
8.	19107003	Asem Vikash Meitei	Border Roads Task Force (BRTF), Imphal
9.	19107005	Gurumayum Dijen Sharma	Border Roads Task Force (BRTF), Imphal
10.	19107019	Sanjenbam Gugu Meetei	Border Roads Task Force (BRTF), Imphal
11.	19107017	Ramsem Mashangva	Border Roads Task Force (BRTF), Imphal
12.	18107026	Sochui Varah	Border Roads Task Force (BRTF), Imphal
13.	18107016	Kumam Sanjoy Singh	Border Roads Task Force (BRTF), Imphal
14.	19107001	Akudari Kiran Raju	Hindustan Shipyard Limited (HSL), Visakhapatnam
15.	19107015	Penugonda Venkata Neelesh Vardhan	Hindustan Shipyard Limited (HSL), Visakhapatnam
16.	19107024	Tejavath Hanmanth	Hindustan Shipyard Limited (HSL), Visakhapatnam
17.	19107009	Mallepogu Kumar	Hindustan Shipyard Limited (HSL), Visakhapatnam
18.	19107023	Indu Murmu	Heavy Engineering Corporation Limited (HECL), Ranchi
19.	20107008	Lanka Naga Durga Jagadeesh	Oil and Natural Gas Corporation Limited (ONGC), Kakinada
20.	20107006	Kanamarlapudi Charan datta	Central Institute of Tool Designed (CITD), Hyderabad

### Name of B.Tech. Students who graduated in 2021-22:

Sl. No.	Enrolment Number	Name of the student
1.	18107001	Aurgha Kamol Bishwas
2.	18107002	Shamulailatpam Dayananda Sharma
3.	18107004	Chingkhomba Arambam
4.	18107005	Banoth Devaraj
5.	18107006	Dalton Potsangbam
6.	18107007	Gajan Vijay Roy
7.	18107008	George Gaijailung Phaomei
8.	18107009	Jatin Prakash
9.	18107010	Henlenlal Singsit
10.	18107011	K Pavan
11.	18107012	Kangujam Ngamba Mangang
12.	18107013	Kovvuri Dileep Kumar

13.	18107014	Khoiraijam Dhanakumar Singh
14.	18107015	Kundeti Madan
15.	18107017	Nadiri Shiva Kumar
16.	18107018	Leishangthem Debananda Meitei
17.	18107019	Pranjali Jain
18.	18107020	Lourembam Dinesh Singh
19.	18107021	Putrevu Nikhil
20.	18107022	Ningthoujam Dingku Singh
21.	18107023	Rohit Agarwal
22.	18107024	S Antony Bariamtak
23.	18107025	Sara Mendon
24.	18107028	Sonmuanching
25.	18107029	Yanna Prasanth
26.	17107003	Naorem Singhajit Singh

**Name of M.Tech. Students who graduated in 2021-22:**

Sl. No.	Enrolment Number	Name of the student
1.	20207001	Thanggoulen Hmangte
2.	20207002	Loyanganba Potsangbam
3.	20207003	Ravi Pratap Singh
4.	20207004	Potshangbam Shantikumar Singh
5.	20207005	Lawrence Ningombam
6.	20207006	Oinam Jackson
7.	20207008	Ksh Galio Singh
8.	20207009	Pukhrambam Sunilkumar Singh

**Name of Ph.D Students who graduated in 2021-22:**

Sl. No.	Enrolment Number	Name Of The Student	Thesis Name	Name Of Supervisor/Co-Supervisor	Date Of Defence
1.	17407005	Chunkyraj Khangembam	Mist Jet Impingement Heat Transfer From A Heated Cylinder	Dr. Dushyant Singh	13-01-2022
2.	18407003	Mr. Narendra Krishania	Comprehensive Analysis Of Engine Performance, Combustion And Emission Parameters For Various Combinations Of Traditional Fuels And Biofuels	Dr. Anil Kumar Birru	18-05-2021

**No. of GATE/NET qualified students in 2021-22:**

Sl. No.	Name of the student	GATE / NET	Percentile for GATE	Category
1.	K Pavan, B. Tech.	GATE	28890 Rank	ST
2.	Gajan Vijay Roy, B. Tech.	GATE	11521 Rank	GEN
3.	Rohit Agarwal, B. Tech.	GATE	8809 Rank	GEN

**No. of students who have been placed in 2021-22: 17****Other Activities:****1. Details of NEP activities conducted by the Department in 2021-22**

1. Organised a 5 days Short Term Course (Under NEP-2020) on “Applications of Vibration and Heat Transfer in Mechanical Engineering” from 27th October to 31st October 2021 in MEDepartment by **Dr.**

**Prabhat Kumar as Coordinator.**

2. Organised a 5 days Short Term Course (Under NEP-2020) on “Applications of Vibration and Heat Transfer in Mechanical Engineering” from 27th October to 31st October 2021 in ME Department by **Mr. Ashutosh Kumar Singh as Coordinator.**
3. One-week short term course on Energy from waste: sustainable approaches March-April 2021 by **Dr. Huirem Neeranjan Singh as Coordinator and Dr. Thokchom Subhaschandra Singh, Dr. Sabindra Kachhap as Convenor.**
4. One Day Industry Visit as a part of NEP 2020 at Takyel Industrial Estate 9<sup>th</sup> May 2022 by
5. Dr. Thokchom Subhaschandra Singh
6. Two (2) Day Skill Upgradation Programme on “Plastic Processing Techniques and Plastic Mould Technology & Entrepreneurship: Opportunities and way forward with CIPET (Govt. of India) at CIPET Imphal from 25<sup>th</sup> and 26<sup>th</sup> May 2022 by **Dr. Thokchom Subhaschandra Singh as Coordinator.**

## **2. Details of Faculty achievement in 2021-22:**

1. **Dr. Dushyant Singh** delivered a lecture on “ Numerical Heat Transfer and Fluid Flow for Industrial Applications” One Day Webinar, on 29<sup>th</sup> November, 2021 in ME Department , *Shri Mata Vaishno Devi University, Katra, Jammu & Kashmir.*
2. **Dr. Dushyant Singh** delivered a lecture on “ Modelling of fluid flow in Industry -1 and Modelling of fluid flow in Industry -2” (Under NEP-2020) on 5 Day Short Term Course “Understanding Complex Fluids: Theoretical & Experimental Techniques” from 22<sup>nd</sup> to 26<sup>th</sup> November 2021 in Department of Physics, *NIT Manipur*
3. **Dr. Dushyant Singh** delivered a lecture on “ Role of Computational Fluid Dynamics in industrial Problem” One Day Webinar, on 23<sup>rd</sup> October, 2021 in ME Department , *G.L. Bajaj Institute of technology and Management , Greater Noida (U.P.).*
4. **Dr. Dushyant Singh** delivered a lecture on “Basic Concepts of Thermodynamics and Heat Transfer for Industrial Applications” (Under NEP-2020) on Applications of Vibration and Heat Transfer in Mechanical Engineering from 27th October to 31st October 2021 in ME Department , *NIT Manipur*
5. **Dr. Dushyant Singh** delivered a lecture on “ Computational Method in Fluid Flow and Heat Transfer in Mechanical Engineering Application” on Emerging Trends in Mechanical Engineering -2021, Sponsored by AICTE-ISTE from 23 to 27, 2021 in ME Department , *Maharishi Markandeshwar (Deemed University) Mullana-Ambala-Haryana.*
6. **Mr. Ashutosh Kumar Singh** delivered a lecture on “Fundamentals and applications of heat transfer and fluid flow (Under NEP-2020) on Applications of Vibration and Heat Transfer in Mechanical Engineering from 27th October to 31st October 2021 in ME Department , *NIT Manipur.*
7. **Dr. Prabhat Kumar** delivered a lecture on “Solving Vibration Problems using MATLAB”, Short Term Course (Under NEP-2020) on Applications of Vibration and Heat Transfer in Mechanical Engineering from 27th October to 31st October 2021 in ME Department, *NIT Manipur.*
8. **Dr. Sabindra Kachhap** delivered expert talk at *CIPET Imphal* on 16<sup>th</sup> December 2021.
9. **Dr. Prabhat Kumar** delivered a lecture on “Design and Applications of Active Magnetic Bearings in Rotor System”, Short Term Course (Under NEP-2020) on Applications of Vibration and Heat Transfer in Mechanical Engineering from 27th October to 31st October 2021 in ME Department, *NIT Manipur.*
10. **Dr. Sabindra Kachhap** delivered expert talk at *Bengal College of Engineering and Technology-Durgapur West Bengal* on 7<sup>th</sup> January 2022.
11. **Dr. Thokchom Subhaschandra Singh** gave a lecture on “Internal Combustion Engine- Fundamentals and Advances in Alternate Fuel Research” at *JJ College of Engineering and Technology, Trichy, Tamil Nadu* on 29-09-2021.
12. **Dr. Prabhat Kumar** delivered a lecture on “Vibration Analysis and Recent Trends of Research in

Rotor-Active Magnetic Bearing System”, One Week Faculty Development Program on Exploring the Research in Mechanical Engineering from 23rd Feb to 27th Feb2022 in ME Department, **Dr. D. Y. Patil Institute of Technology, Pune.**

13. **Dr. Thokchom Subhaschandra Singh** gave a lecture on “Renewable Energy source: Scope and Challenges” at **PSNA College of Engineering and Technology, Dindigul, Tamil Nadu** on 07-10-2021.

### 3. Details of Student Achievement in 2021-22

1. M.Tech. Thermal & Fluid Engineering students (2019-21 Batch), **Mr. Ashutosh NarayanSingh** and **Mr. Ayush kumar Rao** (Supervisor: **Dr. Dusyant Singh**) have been selected for Ph.D. program in IIT.
2. Ph.D. Research Scholar, **Ms. Kedumese u Mekerisuh** (Supervisor: **Dr. Dusyant Singh**) got Research Assistant position in IIT.

### 4. Details of Award/Recognition received by Faculty/Staff/Students in2021-22:

1. Mr. Pabitra Sahu, Research Scholar (Supervisor: **Dr. Sabindra Kachhap**) bagged Best paper award in” Progressive Research in Industrial & Mechanical Engineering, **National Institute of Technology Patna, India.** (5<sup>th</sup> - 7<sup>th</sup> Aug. 2021)

### 5. Details of contribution to society:

1. Under the programme of Community Engagement service, NEP 2020, **Dr. Maibam Bindya Devi** (Committee member) arranged an interaction programme with school going children and shared the knowledge of engineering projects taken up by B.Tech Mechanical Engineering students of NIT Manipur.
2. Opportunity and Scope for the Higher Education and Jobs in India (2022), Awareness of Legal Aid by **Dr. Anil Kumar Birru**

### 6. Steps taken for popularization of Science and Technology among the students of Manipur

- a. Under the programme of Community Engagement service, NEP 2020, Dr. Maibam Bindya Devi (Committee member, NEP 2020) arranged an interaction programme with schoolgoing children and shared the knowledge of engineering projects taken up by B.Tech Mechanical Engineering students of NIT Manipur (Interaction session image enclosed).



- b. Awareness on Engineering Education, Heritage Christian Collage-Makhan, Manipur(2021) by **Dr. Anil Kumar Birru**

## 4.6 DEPARTMENT OF PHYSICS

### Academic Department

Name of the Department : Physics

Head of Department : Dr. Bibhu Prasad Swain

### Brief introduction of the Department

Department of Physics was bifurcated from Basic Science and Humanities in the year 2016. At present, the department consists of two associates, three assistant professors and one lecturer. Primarily department of physics supports the teaching of engineering physics for first-year B.Tech students and runs M.Sc and Ph.D. programs. The department housed 30 M.Sc and 30 Ph.D. students. The faculties have published around 100 research papers in SCI/SCIE/Scopus journals and the proceedings of International and National State conferences etc. Six research projects funded by SERB/ISRO and DAE were completed and 4 research projects running.

### The highlight of Research Activities

1. The recent research activities being carried out in the department of physics are
2. Nanoscience And Nanotechnology
3. Soft Condensed Matter Physics (Theory and Experimental)
4. Ferroelectric and Ferromagnetic Materials
5. Natural Magnetic Minerals

### Faculty Members (Regular)

Sl. No	Name of the Faculty	Designation	Qualification (with the last institution)	Email
1	Dr. Bibhu Prasad Swain	HOD & Associate Professor	Ph.D. (IIT Bombay)	bibhuprasad.swain@gmail.com
2	Dr. Ibetombi Soibam	Associate Professor	Ph.D. (Manipur University)	ibetombi96@gmail.com
3	Dr. Mamata Maisnam	Assistant Professor	Ph.D. (Manipur University)	mmaisnam.nitm@gmail.com
4.	Dr. Loushambam Herojit Singh	Assistant Professor	Ph.D. (Homi Bhabha National Institute, IGCAR)	loushambam@gmail.com
5.	Dr. Shagolsem Lenin Singh	Assistant Professor	Ph.D. (TU Dresden, Germany)	slenin2001@gmail.com

### Faculty Members (Contractual)

Sl. No	Name of the Faculty	Designation	Qualification (with the last institution)	Email
1	Dr. Thoudam Diana	AssistantProfessor	Ph.D. (Manipur University)	<a href="mailto:dianathoudam@gmail.com">dianathoudam@gmail.com</a>



## Non-Teaching Staff (Contractual)

Sl. No	Name of the Faculty	Designation	Qualification (with the last institution)	Email
1	Dr. Sujata Tongbram	Technical Assistant	Ph.D. (Assam University)	sujatatongbram155@gmail.com
2	Jimpaul Samukcham	Technical Assistant	Ph.D. (Pursuing)	samukchamjimpaul@gmail.com

## Academic Activities

### Students Enrolment

Name of the Course	1st Year	2nd year	Total
M.Sc (Physics)	15	15	30

## Ph.D. Program

No. of Full Time	29
No. of Part-Time	01
Total	30
Degree awarded in 2021-22	02

## Ph.D. thesis awarded 2021-22

Sl. No	PhD student	Enrolment No	Title of Thesis	Supervisor
1	Dr. Huidrom Surjalata Devi	16PHP001	Synthesis of lead free potassium sodium (KNN) based ceramics and study of piezoelectric properties	Dr. Mamata Maisnam
2	Dr. Wahengbam Ishwarchand Singh	19409005	Investigation of chemical bonding and electronic network of reduced graphene oxide and polymer electrospun nanofiber	Dr. Bibhu Prasad Swain

## Research Information (2021-22)

### (A) Sponsored Research Projects from Govt./Semi Govt (2021-22)

Sl. No	Name of the project	Funding Agency	Project amount	Project PI
1	Carbon decorated mixed metal oxides for photo and electrocatalytic degradation of organic dyes and pesticides	SERB, DST, New Delhi Government Of India	Rs. 22,17,355/-	<b><u>Dr. L. Herojit Singh</u></b>
2	Synthesis of spinel structured lithium-based soft ferrimagnets for application in satellite communication	ISRO, Bengaluru	Rs. ₹15.64 Lakh (File No.: GU/RAC-S/01/2020-21/01)	<b><u>Dr. Mamata Maisnam</u></b>



3	Development of InSAR-based Techniques for high-resolution surface topography and Ice velocity ( under MAHTRAM)	ISRO, Ahmedabad	Collaborative project with MTU, Imphal and NIT Manipur	Co-PI: <b><u>Dr. Mamata Maisnam</u></b>
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### Patent Details if any: (2021-22)

Sl. No	Inventor	Title	Patent number:	Country
1	Biswas J.; <b><u>Swain B. P.</u></b> ; Rai S.; Bhujel R.; Rai A. and Kumar D.,	Synthesis of Reduced Graphene Oxide Using Swertia Chirayita Extract	2021103687	(Innovation Patent Australia)

### Publication in Journals (2021-22)

Sl. No	Authors names	Title of the paper	Name of the journal	Vol (issue), Pages, Years	SCI/ SCOPUS/ Others
1	Devi, P.S., Chanu, S.N., Dasgupta, P., Swain, B.S., <b><u>Swain, B.P.</u></b>	Structural, optical, thermal and electrochemical properties of rGO/ PEDOT:PSS/PVP composite for supercapacitor electrode application	Applied Physics A: Materials Science and Processing	128(5), 403(2022)	SCIE, Q2, IF= 2.983
2	Devi, N.A., Sinha, S., Singh, W.I., Nongthombam, S., <b><u>Swain, B.P.</u></b>	Silver-decorated reduced graphene oxide nanocomposite for supercapacitor electrode application	Bulletin of Materials Science	45(1), 7 (2022)	SCIE, Q3, IF=1.783
3	Rai, S., Bhujel, R., Mondal, M.K., <b><u>Swain, B.P.</u></b> , Biswas, J.	Study of the morphological, optical, structural and electrical properties of silicon nanowires at varying concentrations of the catalyst precursor,	Materials Advances	3(6), pp. 2779–2785(2022)	ESCI, Q2, IF yet to come
4	Sinha, S., Singh, W.I., Nongthombam, S., Swain, B.S., <b><u>Swain, B.P.</u></b>	Optical properties, electrochemical analysis and corrosion resistance studies of polyaniline/reduced graphene Oxide/ZrO <sub>2</sub> for supercapacitor application	Journal of Physics and Chemistry of Solids	161, 110478 (2022)	SCIE, Q2, IF= 3.995
5	Nongthombam, S., Sinha, S., Devi, N.A., Laha, S., <b><u>Swain, B.P.</u></b>	Synthesis and Characterization of rGO/GaP Nanocomposites Synthesized via Chemical Method Coupled with Investigation of Their Supercapacitive Behavior	Arabian Journal for Science and Engineering	47, 7683–7692 (2022)	SCIE, Q1, IF= 2.807
6	Devi, N.A., Sinha, S., Nongthombam, S., <b><u>Swain, B.P.</u></b>	Structural, optical, electrochemical and electrical studies of Bi <sub>2</sub> O <sub>3</sub> @rGO nanocomposite	Materials Science in Semiconductor Processing	137, 106212 (2022)	SCIE, Q1, IF= 4.644
7	Singh, W.I., Sinha, S., Devi, N.A., ...Laha, S., <b><u>Swain, B.P.</u></b>	Fabrication and Characterization of Reduced Graphene Oxide/ Polyaniline/Poly(Caprolactone) Electrospun Nanofiber	Arabian Journal for Science and Engineering	47(1), pp. 925–934 (2022)	SCIE, Q1, IF=2.807

8	Rai, S., Bhujel, R., Biswas, J., <b><u>Swain, B.P.</u></b>	An eco-friendly method for synthesis of Cu <sub>2</sub> O/rGO/PANI composite using Citrus maxima juice for supercapacitor application	Journal of Materials Science: Materials in Electronics	32(23), 27937–27949 (2021)	SCIE, Q2 IF= 2.478
9	Ghadai, R.K., Das, S., Kalita, K., <b><u>Swain B.P.</u></b> , Davim, J.P.	Structural and Mechanical Analysis of APCVD Deposited Diamond-Like Carbon Thin Films	Silicon	13(12), 4453–4462 (2021)	SCIE, Q2, IF= 2.941
10	Singh, W.I., Sinha, S., Devi, N.A., ...Laha, S., <b><u>Swain, B.P.</u></b>	Investigation of chemical bonding and electronic network of rGO/ PANI/PVA electrospun nanofiber	Polymer Bulletin	78(11), 6613–6629 (2021)	SCIE, Q2, IF=2.87
11	Rai, S., Bhujel, R., Khadka, M., ... <b><u>Swain, B.P.</u></b> , Biswas, J.	Synthesis, characterizations, and electrochemical studies of ZnO/reduced graphene oxide nanohybrids for supercapacitor application	Materials Today Chemistry	20, 100472 (2021)	SCIE, Q1, IF=7.613
12	<b><u>Swain, B.P.</u></b>	Investigation of fractal behavior, optical properties and electronic environments of carbon-doped of ZnO Thin Films	Applied Physics A: Materials Science and Processing	127(5), 375 (2021)	SCIE, Q2, IF= 2.983
13	Ishwarchand, W., Sarakar, G., <b><u>Swain B.P.</u></b>	Investigation of optical properties, chemical network and electronic environments of polycaprolactone/ reduced graphene oxide fiber nanocomposites	Polymer Bulletin	140 (2021) <a href="https://doi.org/10.1007/s00289-021-03920-6">https://doi.org/10.1007/s00289-021-03920-6</a>	SCIE, Q2, IF=2.87
14	<b><u>Swain B.P.</u></b>	Process Dependent Strain Behaviour, Fractal Analysis, and Bonding Network of Nc-Si(SiC) Thin Films	Silicon	14, 4523–4533 (2022)	SCI, Q2, IF= 2.941
15	B. Wareppam, N. Joseph Singh, S. Chakraborty, Ng. Aomoa, M. Kakati, A.C. de Oliveira, V.K. Garg, K. Priyananda Singh, S. Barg, S. Ghosh, <b><u>L. Herojit Singh</u></b>	Unused to useful: Recycling plasma chamber coated waste composite of ZnO and $\alpha$ -Fe <sub>2</sub> O <sub>3</sub> into an active material for sustainable waste-water treatment	Chemical Engineering Journal Advances	7, 100120 (2021)	SCIE, IF= Yet to come
16	R. Mythili, R. Kirana, <b><u>L. Herojit Singh</u></b> , R. Govindaraj, A. K. Sinha, M. N. Singh, S. Saroja, M. Vijayalakshmi, and S. K. Deb	Identification of Retained Austenite in 9Cr-1.4W-0.06Ta-0.12C Reduced Activation Ferritic Martensitic Steel	Symmetry	14(2), 196 (2022),	SCIE, Q2, IF=2.940
17	Jenis Thongam, and <b><u>Lenin S. Shagolsem</u></b>	Effect of topology on the statics and dynamics of a polymer chain at the fluid-fluid interface: a MD simulation study	Langmuir	38, 6330 (2022)	SCIE, Q1, IF= 4.331

18	Somas S. Urikhibam and <b><u>Lenin S. Shagolsem</u></b>	Effect of ion size disparity on the thermal hysteresis of ionic liquids	Material Today: Proceedings	46, 7044-7048 (2021)	Scopus
19	Jackson Pame and <b><u>Lenin S. Shagolsem</u></b>	Molecular dynamics simulations of 2d size-polydisperse fluid close to freezing transition	Macromolecular Symposia	399 (1), 2100037 (2021)	Scopus, Q3, IF=0.85
20	Thoudam Vilip Singh and <b><u>Lenin S. Shagolsem</u></b>	Shape analysis of energy polydisperse polymers	Macromolecular Symposia	399 (1), 2100002 (2021)	Scopus, Q3, IF=0.85
21	Jimpaul Samukcham and <b><u>Lenin S. Shagolsem</u></b>	Static and dynamics of concentrated colloidal system close to the freezing transition: Effect of varying particle softness	Macromolecular Symposia	399 (1), 2100038 (2021)	Scopus, Q3, IF=0.85
22	<b><u>Maisnam, M.</u></b>	Studies of nanosized trivalent yttrium substituted lithium cobalt ferrites synthesized by sol-gel method	Materials Today: Proceedings	62, 5550-5554 (2022)	Scopus
23	Monika Aniz, I., <b><u>Maisnam, M.</u></b>	Microwave sintering of MnO <sub>2</sub> added potassium sodium niobate ceramics and studies of their electrical properties	Ferroelectrics	588(1), pp. 78-87 (2022)	SCIE, Q4, IF= 0.62
24	<b><u>Maisnam, M.</u></b>	Magnetic hysteresis properties of sol-gel synthesized Li-Co-Y ferrites	Ferroelectrics	587(1), pp. 56-62 (2022)	SCIE, Q4, IF= 0.62

### Conferences Presentations (2021-22)

Sl. No	Authors Name	Title of the Paper	Name of conference	Date
1	Sayantan Sinha, Kanhu Charan Andia, Wahrenbam Ishwarchand Singh, Naorem Aruna Devi, Sumitra Nongthombam, Bhabani Sankar Swain, <b><u>Bibhu Prasad Swain</u></b>	Green synthesis of rGO using banana, mango leaves, and potato extracts as reducing agent	Cutting Edge Research in Materials and Sustainable Chemical Technologies (CRMSCT-2022)	27/01/2022
2	Sagolsem Nonganbi Chanu, <b><u>Bibhu Prasad Swain</u></b>	Design and Preparation of Reduced Graphene Oxide/ Nickel Oxide Nanocomposite as Supercapacitor Electrode Material	ETONIMT-2022	16/04/2022
3	Sagolsem Nonganbi Chanu, <b><u>Bibhu Prasad Swain</u></b>	Design and Preparation of Reduced Graphene Oxide/ Vanadium Pentoxide/ Polycaprolactone Nanofiber as Supercapacitor Electrode Material	ACR-2022	23/04/2022
4	Umesh Rizal, Bhabani. S. Swain, <b><u>Bibhu. P. Swain</u></b>	Structural, Chemical network and Optoelectronic Properties of Ag Catalyzed CVD Grown Gallium Nitride Nanowires in Reduced Atmosphere	CRMSCT-2022	27/01/2022

5	Zeeshan Mustafa, Rabina Bhujel, Sadhna Rai, Ashis Sharma, B. B. Pradhan, <b><u>Bibhu Prasad Swain</u></b>	Graphene-Polyaniline Composites—Synthesis, Characterization for Supercapacitor Applications	Cutting Edge Research in Materials and Sustainable Chemical Technologies (CRMST-2022)	27/01/2022
6	Zeeshan Mustafa, Rabina Bhujel, Sadhna Rai, Ashis Sharma, Bal Bahadur Pradhan and <b><u>Bibhu Prasad Swain</u></b>	Investigation of Morphological, Structural, Vibrational and Electrochemical Properties of Polyaniline For Supercapacitor Applications	3rd International conference on Mechanical Materials and Renewable energy 2022.	11th - 12th Feb 2022

### Publication in books/ book chapters (2021-22)

Sl. No.	Authors	Title of Book / Book Chapter	Name of The Book	Page No/ DOI
1	<b><u>Bibhu Prasad Swain</u></b> , (Editor)	Nanostructured Biomaterials, Basic Structures and Applications	Nanostructured Biomaterials, Basic Structures and Applications	(2022), Publisher: Springer Singapore, ISBN: 978-981-16-8398-5, DOI: Pages: 508
2	<b><u>Bibhu Prasad Swain</u></b> , (Editor)	Advances in Nanostructured Materials	Advances in Nanostructured Materials	(2022), ISBN: 978-981-16-8390-9, Publisher Springer Singapore, DOI: 10.1007/978-981-16-8390-9, Pages: 506
3	Naorem Aruna Devi, <b><u>Bibhu P. Swain</u></b>	Graphene-derived nanomaterials and their applications in Covid-19-related prevention, treatment and diagnosis	Nanostructured Biomaterials: Structure, Properties and Applications	pp 425–454, 10.1007/978-981-16-8399-2_12
4	Rabina Bhujel, Sadhna Rai, Utpal Deka, Joydeep Biswas, and <b><u>Bibhu P. Swain</u></b>	Silicon Nanowires: A Magic Material for Hybrid Solar Cells	Advances in Nanostructured Materials	Page 21-36
5	Sadhna Rai, Rabina Bhujel, Joydeep Biswas, and <b><u>Bibhu P. Swain</u></b>	Reduced Graphene Oxide/ Silicon Nanowire Heterojunction-Fabrication and Photovoltaic Application	Advances in Nanostructured Materials	Pages 87-98.
6	Sumitra Nongthombam and <b><u>Bibhu Prasad Swain</u></b>	Chemical Bath Deposited Zinc Oxide Nanostructured Thin Films and Their Applications	Advances in Nanostructured Materials	Pages 99-114
7	Pukhrambam Sushma Devi and <b><u>Bibhu Prasad Swain</u></b>	Recent Trends and Research Challenges on Supercapacitor	Advances in Nanostructured Materials	Pages 115-129.

8	N. Joseph Singh, Boris Wareppam & <b><u>L. Herojit Singh</u></b>	Magnetic Nanoparticles in Wastewater Treatment, Supercapacitor, and Biomedical Applications	Advances in Nanostructured Materials	pp 131–143 (2022).
9	Y. Haripriya Devi, <b><u>L. Herojit Singh</u></b> & Boris Wareppam	Effects of Viscosity on the Magnetic-Induced Heat Generation”	Advances in Nanostructured Materials	pp 145–161 (2022).
10	Ayekpam Kiranjit Singh, Th. David Singh, and <b><u>Ibetombi Soibam</u></b>	Synthesis and Characterization of LFO-BFO Multiferroic Nanocomposites,	Nanostructured smart materials: synthesis, characterization and potential applications.	Apple Academic, CRC Press, Taylor and Francis Group -July 2021, ISBN 9781003130468, pg. 193-202
11	Huidrom Surjalata Devi, <b><u>Mamata Maisnam</u></b>	Lead-Free Piezoelectric Nanostructures and Their Applications	Advances in Nanostructured Materials	Pages 343-357
12	Irom Monika Aniz, <b><u>Mamata Maisnam</u></b>	Polycrystalline Alkali Niobate Piezoelectric Ceramics Sintered by Microwave Technique	Advances in Nanostructured Materials	Pages 411-430 DOI: 10.1007/978-981-16-8391-6_20
13	Nandeibam Nilima, Sumitra Phanjoubam, <b><u>Mamata Maisnam</u></b>	Electrical Characterization of Sol–Gel Derived Nanostructured Li–Ni–Co Ferrites	Advances in Nanostructured Materials	Pages 431-442 DOI: 10.1007/978-981-16-8391-6_21
14	Singh, Thoudam Vilip, and <b><u>Lenin S. Shagolsem.</u></b>	Advances in Nanostructured Polymers	Advances in Nanostructured Materials	(2022): 199-226.
15	Urikhinbam, Somas Singh, and <b><u>Lenin S. Shagolsem.</u></b>	Nanostructures in Ionic Liquid	Advances in Nanostructured Materials Springer, Singapore,	2022. 181-198.
16	Pame, Jackson, and <b><u>Lenin S. Shagolsem</u></b>	Low-Dimensional Nanostructured Materials for Sustainable Generation of Water and Energy	Advances in Nanostructured Materials	Springer, Singapore, 2022. 281-295.
17	Singh, Thoudam Vilip, and <b><u>Lenin S. Shagolsem</u></b>	Biopolymer Based Nano-Structured Materials and Their Applications	Nanostructured Materials and their Applications	Springer, Singapore, 2021. 337-366

### Short Term course/ workshop/Seminar/ conference conducted by the Department:

SL.No	Title	Coordinator (s)	Sponsored	Date
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1	5 Day Short Term Course on “Advances in Material Processing & its Applications”,	Dr. Ibetombi Soibam Dr. Mamata Maisnam Dr. L. Herojit Singh Dr. Sh. Lenin Singh Dr. Diana Thougdam	Self-sponsored	21 March – 25 March, 2022
2	5 Day Short Term Course on “Understanding Complex Fluids: Theoretical & Experimental Techniques”,	Dr. Bibhu Prasad Swain Dr. Sh. Lenin Singh	Self-sponsored	29 Nov. - 3 rd Dec. 2021
3	5 Days Faculty Development Program on Nanostructured Materials and Their Applications	Dr. Bibhu Prasad Swain	AICTE	7-11 <sup>th</sup> Feb 2022.

### Internship or Industrial Visits: None

#### Name of M.Sc students who graduated in 2021-22

Sl.No	Enrolment No.	Name of Student
1	20309001	Tiasa Saha
2	20309002	Mandvee Singh
3	20309003	Subhadip Pal
4	20309004	Subham Jha
5	20309005	Gunjan
6	20309006	Saubhagini Behera
8	20309011	JuliaTongbram
9	20309012	Ankita Sarma

### No of GATE/NET qualified students in 2021-22: 03

#### Other Activities:

##### 1. Details of Awards/ Recognition received by Faculty/Staff/students in 2021-22:

Dr. Bibhu Prasad Swain: Listed in World Ranking of top 2% Indian scientists in Materials for 2021 by Stanford University ranking

## 4.7 DEPARTMENT OF CHEMISTRY

### Academic Department

Name of the Department : Chemistry  
Head of Department : Dr. Nagarajan. S

### Brief Introduction of the Department

We started our journey in 2010 as Basic Sciences and Humanities and become an independent, full-fledged department at 2016. Over the last two years, we have grown our expertise and potential in the core Chemical Sciences curriculum and research. We have a postgraduate program in the Department of Chemistry, including a MSc and PhD in Chemistry. The sanctioned students' strengths MSc is 15 per year, which has a scope to increase. At present, 12 students have enrolled for PhD programme and one has been awarded degree. Beside this, our department hosts postdoctoral (NPDF) as well as DST INSPIRE fellow.

Our department offers career-oriented PG course and the primary goal of our curriculum is to develop the students with scientific mind, to promote their problem-solving skills and innovation of new technologies. Department offers large number of elective courses for providing wide spectrum of options to the students to pursue their interest. The course contents are often updated to introduce new scientific developments. MSc projects are designed by the faculty members to promote the students with research attitude and extract publication out of their work. Passed out students are well trained with contemporary and modern methodologies and techniques and placed in several reputed institutes for PhD programme or other.

### Highlight of Research Activities

Active research groups of the department of chemistry are motivated to carry out challenging, collaborative and interdisciplinary research. We are able to build up state of the art research facilities to support our academic programs and research. Externally funded projects sponsored by SERB, BRNS or DST is estimated to be around 1.5 crore. Consultancy projects are also undertaken at our department. Faculty members and research scholars of our department with excellent academic credentials have several distinguished records in both teaching and research. They are awarded with many prestigious awards at national and international levels. Several faculty members are on the editorial boards of national and international journals. Prestigious GIAN courses in collaboration with foreign faculties have been organized by our faculty members.

### Faculty Details (Regular): 04

Sl. NO	Name of the Faculty	Designation	Qualification (with last Institution)	E-mail
1.	Dr. Thiyam David Singh	Associate Professor	Ph.D., Post Doc. (Nagaland Univ.)	davidthiyam@gmail.com
2.	Dr. Mithun Roy	Assistant Professor	Ph.D., Post Doc. (IISc Bangalore)	mithunroy.iisc@gmail.com
3.	Dr. Chandi Charan Malakar	Assistant Professor	Ph.D. (Ludwig Maximilians Univ. Munich, Germany)	chdeepm@gmail.com



4.	Dr. Nagarajan. S	Assistant Professor	Ph.D., Post Doc. (National Chemical Laboratory Pune)	nagarajan.sankar84@gmail.com
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### Faculty Members (Contractual): 02

Sl. NO	Name of the Faculty	Designation	Qualification (with last Institution)	E-mail
1.	Dr. Henam Premananda Singh	Assistant Professor	Ph.D. (Delhi Univ.)	henam_boynao@yahoo.co.in
2.	Dr. W. Sujata	Assistant Professor	Ph.D., Post Doc. (Manipur University)	wangkheimayums@yahoo.com

### Staff Details (Contractual): 02

Sl. NO	Name of the Faculty	Designation	Qualification (with last Institution)	E-mail
1.	Ngasepam Bhogenjit Singh	Technical Assistant	M.Sc., (Chemistry)	bhogenjitn@yahoo.com

### Academic Activities

#### Students Enrolment

Name of the Course	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	Total
M.Sc	17	12	29

### Ph.D. Program

	2021-22
No. of full time	20
Part time	NA
Total	20
Degree Awarded during 2021-22	4

### Research Information

#### Sponsored Research Projects from Govt./Semi Govt.

Sl. NO	Name of the Project	Funding Agency	Project Amount	Project PI
1.	Investigation on Metal-Free Approaches towards C-C and C-Heteroatom Bond Formation for the Synthesis of Carbocycles and Heterocycles.	SERB	35,77,332/-	Dr. C.C. Malakar
2.	Computational studies on investigation of the potential role of metal-based compounds as the inhibitors of SARS-CoV-2 as well as other aggressive mutant strains of SARS-CoV-2	SERB	20,18,632/-	Dr. Mithun Roy

3.	Novel Cobalt(III)-based bio-reductive prodrug modelling for hypoxia selective chemotherapeutic steering of hypoxia inducible factors (HIF) as an alternative source of treatment stratagem for breast cancer	ICMR	33,50,000/-	Dr. Mithun Roy
4.	Natural organic mordants for printing, painting and dyeing	DST-Manipur	90,000/-	Dr Thiyam David Singh Co-PI Dr W Sujata

### Patent Details, if any

1. DJ Dellinger, L Monfregola, M Caruthers, M Roy, Phosphorous protecting groups and methods of preparation and use thereof, US Patent 11,104,699, 2021.
2. Mithun Roy, Dulal Musib, Maynak Pal, Red light activable, singlet oxygen generating biotin-based copper(II) complex functionalized gold nanocomposite, Indian Patent, 2022, Applied.
3. **C. C. Malakar**, R. Gujarappa, N. Vodnala “*Organocatalytic Process for the Synthesis of 2,6-Diaryl/Hetero-Aryl Pyridines*” Indian Patent Application, Filed on 14<sup>th</sup> June **2021**, Application number: 202131026450. (**Published** in Indian Patent Office Official Journal, Issue no.30, 2022, page 47469).
4. **C. C. Malakar**, D. Kaldhi, R. Gujarappa “*Process for the Synthesis of Azides from Amines under Nitrite Salts-Free Approach*” Indian Patent Application, Filed on 14<sup>th</sup> September **2021**, Application number: 202131041413. (**Published** in Indian Patent Office Official Journal, Issue no.30, 2022, page 47472).
5. **C. C. Malakar**, D. Kaldhi, R. Gujarappa “*Process for the Nitrite Salt Free Preparation of Iodoarenes and Iodoalkanes*” Indian Patent Application, Filed on 28<sup>th</sup> October **2021**, Application number: 202131049474 (**Published** in Indian Patent Office Official Journal, Issue no.7, 2022, page 9480).
6. **C. C. Malakar**, D. Kaldhi, R. Gujarappa “*Nitrite-Salts and Diazonium-Salts Free Process for the Preparation of Aryltriazole Derivatives*” Indian Patent Application, Filed on 1<sup>st</sup> August **2022**, Application number: 202231043850.
7. W. Sujata, F. C. Mandal, Jayantha Mahapatra, Mono herbal formulations in broader aspects of metabolic syndrome. Indian Patent Application number .201931028255

### Publication in Journals (2021-22)

1. Arup K. Kabi, Maynak Pal, Raghuram Gujarappa, Chandi C. Malakar, Mithun Roy, Overview of Hydroxychloroquine and Remdesivir on severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), *J. Heterocyclic Chem.*, **2022** (doi.org/10.1002/jhet.4541).
2. M. Pal, A. Panwar, S. Wahengbam, D. Musib, **M. Roy\***, “In Silico Analysis of Ferrocenyl-analogues as the Potential Drugs Against Aggressive UK-based Strain of SARS-CoV-2 Virus” Preprint, Research square, 2022 (DOI: https://doi.org/10.21203/rs.3.rs-1252279/v1)
3. M Pal, D Musib, **M Roy\***, “SAR-based approach to explore in silico ferrocene analogues as the potential inhibitors of major viral proteins of SARS-CoV-2 virus and human Ca<sup>2+</sup>-channel blocker” *Ind. J. Chem.*, **2022**, *61*, 370-384.
4. D Musib, V Ramu, MK Raza, A Upadhyay, M Pal, A Kunwar, **M Roy\***, “La(III)–curcumin-functionalized gold nanocomposite as a red light-activatable mitochondria-targeting PDT agent”, *Inorg. Chem. Front.*, **2022**, *9*, 686-701.
5. M. Pal, D. Musib, A.J. Zade, N. Chowdhury, **M. Roy\***, “Computational Studies of Selected Transition Metal Complexes as Potential Drug Candidates against the SARS-CoV-2 Virus”, *ChemistrySelect*, **2021**, *6*, 7429-7435.
6. B Sanasam, MK Raza, D Musib, **M Roy\***, Photochemical and photocytotoxic evaluation of new

- Oxovanadium (IV) complexes in photodynamic application.” *J. Chem. Sci.*, **2021**, 133 (<https://doi.org/10.1007/s12039-021-01896-4>)
7. M. Pal, D. Musib, M. Pal, G. Rana, G. Bag, S. Dutta and **M. Roy\***, “A noncovalent hybrid of [Pd(phen)(OAc)<sub>2</sub>] and st-DNA for the enantioselective hydroamination of  $\beta$ -nitrostyrene with methoxyamine’ *Org. Biomol. Chem.*, **2021**, DOI: 10.1039/D1OB00714A.
  8. M. Pal, V. Ramu, D. Musib, A. Kunwar, A. Biswas, **M Roy\***, Iron (III) Complex-Functionalized Gold Nanocomposite as a Strategic Tool for Targeted Photochemotherapy in Red Light, *Inorg. Chem.* **2021**, 60, 6283–6297.
  9. B Sanasam, MK Raza, D Musib, **M Roy\***, Photochemical and photocytotoxic evaluation of new Oxo vanadium (IV) complexes in photodynamic application, *Journal of Chemical Sciences*, **2021**, 133, 1-14.
  10. M Pal, D Musib, **M Roy\***, Transition metal complexes as potential tools against SARS- CoV-2: an in-silico approach, *New J. Chem.*, **2021**, 45, 1924-1933.
  11. D Musib, MK Raza, M Pal, **M Roy\***, A red light-activable MnI(CO)<sub>3</sub>-functionalized gold nanocomposite as the anticancer prodrug with theranostic potential, *Applied Organometallic Chemistry*, **2021**, 35, e6110.
  12. B Sanasam, MK Raza, D Musib, M Pal, M Pal, **M Roy\***, Photodynamic Applications of New Imidazo [4, 5-f] [1, 10] phenanthroline Oxidovanadium (IV) Complexes: Synthesis, Photochemical, and Cytotoxic Evaluation, *ChemistrySelect*, **2021**, 5, 13824-13830.
  13. S B Chanu, M K Raza, D Musib, M Pal, M Pal, **M Roy\***, Potent photochemotherapeutic activity of iron (III) complexes on visible light-induced ligand to metal charge transfer, *Chemistry Letters*, **2021**, 49, 724-727.
  14. L R Devi, M K Raza, D Musib, V Ramu, J Devi, **M Roy\***, Nucleus targeting anthraquinone-based copper (II) complexes as the potent PDT agents: Synthesis, photo-physical and theoretical evaluation, *Inorganica Chimica Acta*, **2021**, 500, 119208.
  15. S. Polina, V. P. R. K. Putta, R. Gujjarappa, V. Singh, P. P. Pujar and **C. C. Malakar** “*P(III)-Mediated Cascade C-N/C-S Bond Formation: A Protocol towards the Synthesis of N,S-Heterocycles and Spiro Compounds*” *Adv. Synth. Catal.* **2021**, 363, 431-445
  16. S. Polina, V. P. R. K. Putta, R. Gujjarappa, P. Pujar and **C. C. Malakar** “*Aza-Michael addition of 1,2-diazoles to structurally diverse enones: Efficient methods toward  $\beta$ -amino ketones*” *J. Heterocycl. Chem.* **2021**, 58, 1029-1033
  17. V. Kumar, D. Singh, R. Gujjarappa, **C. C. Malakar** and V. Singh “*Efficient Approach towards the Polysubstituted 4H-Pyran Hybrid Quinolone Derivatives and Subsequent Copper-Catalyzed Hydroxylation of Haloarenes*” *HeteroCycles* **2021**, 102, 465-479
  18. N. Devi, A. Gupta, R. Gujjarappa, **C. C. Malakar** and V. Singh “*Synthesis of Substituted Pyrazolo[4,3-c]quinolones and the C-C Bond Cleavage During Reductive Cyclization*” *HeteroCycles* **2021**, 102, 705 - 722
  19. S. Kumar, **C. C. Malakar** and V. Singh “*Cu(II)-Catalysed Azide-Alkyne Cycloaddition Reaction towards Synthesis of  $\beta$ -Carboline C1-Tethered 1,2,3-Triazole Derivatives*” *ChemistrySelect* **2021**, 6, 4005-4010
  20. R. Gujjarappa, N. Vodnala, A. Kandpal, L. Roy, S. Gupta, and **C. C. Malakar** “*C<sub>sp</sub>-C<sub>sp</sub> Bond Cleavage and Fragments Coupling: Transition Metal-Free “Extrusion and Recombination” Approach towards Synthesis of 1,2-Diketones*” *Org. Chem. Front.*, **2021**, 8, 5389-5396
  21. A. K. Kabi, R. Gujjarappa, A. Roy, A. Sahoo, D. Musib, N. Vodnala, V. Singh, and **C. C. Malakar** “*Transition Metal-Free Transfer Hydrogenative Cascade Reaction of Nitroarenes with Amines/Alcohols: Redox-Economical Access to Benzimidazoles*” *J. Org. Chem.* **2021**, DOI: <https://doi.org/10.1021/acs.joc.1c01450>
  22. R. Gujjarappa, N. Vodnala, D. Musib, and **C. C. Malakar** “*Organocatalytic Decarboxylation and Dual C(sp<sup>3</sup>)-H Bond Functionalization Toward Facile Access to Divergent 2,6-Diarylpyridines*” *Asian J. Org. Chem.* **2022**, <https://doi.org/10.1002/ajoc.202100627>

23. M. Singh, R. Jamra, A. K. Paul, **C. C. Malakar**, V. Singh “KI-assisted Sulfur Activation/Insertion/Denitration Strategy towards Dual C–S Bond Formation for One-pot Synthesis of  $\beta$ -Carboline-tethered 2-Acylbenzothiophenes” *Asian J. Org. Chem.* **2022**, <https://doi.org/10.1002/ajoc.202100653>
24. A. Garg, K. Kant, K. K. Roy, A. Sahoo, **C. C. Malakar**, S. Gupta “Docking-based evaluation against Human Tankyrase-1 and Tankyrase-2 enzyme” *Materialstoday: Proceedings.* **2022**, <https://doi.org/10.1016/j.matpr.2022.03.095>
25. R. Reetu, A. Garg, K. K. Roy, A. Roy, S. Gupta, **C. C. Malakar** “In-silico studies for targeting PPAR $\gamma$  for the Type II Diabetes Mellitus” *Materialstoday: Proceedings.* **2022**, <https://doi.org/10.1016/j.matpr.2022.01.299>
26. R. Reetu, R. Gujarappa, **C. C. Malakar** “Recent Advances in Synthesis and Medicinal Evaluation of 1,2-Benzothiazine Analogues” *Asian J. Org. Chem.* **2022**, <https://doi.org/10.1002/ajoc.202200163>
27. A. K. Kabi, M. Pal, R. Gujarappa, **C. C. Malakar**, Mithun Roy “Overview of Hydroxychloroquine and Remdesivir on severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)” *J. Heterocycl. Chem.* **2022**, <https://onlinelibrary.wiley.com/doi/full/10.1002/jhet.4541>
28. E. P. Devi, D. Kaldhi, R. Sengupta, A. Roy, A. Sahoo, I. Saha, **C. C. Malakar** “Catalytic Iodine and Morpholine as Reagent Combination for Hydration of Alkynes via Markovnikov Addition” *Asian J. Chem.* **2022**, DOI: 10.14233/ajchem.2022.23751
29. L. S. Singh, A. K. Kabi, R. Sengupta, A. Roy, A. Sahoo, I. Saha, **C. C. Malakar** “C-H Functionalization and C-N Bond Formation Approaches under Catalytic Conditions for the Synthesis of  $\alpha$ -Ketoamides and 2,4-Disubstituted-1,3,5-triazines” *Asian J. Chem.* **2022**, DOI: 10.14233/ajchem.2022.23769
30. A. K. Kabi, S. Sravani, R. Gujarappa, A. Garg, N. Vodnala, U. Tyagi, D. Kaldhi, R. Velayutham, S. Gupta, **C. C. Malakar** “An Introduction on Evolution of Azole Derivatives in Medicinal Chemistry” *Springer Nature*, Singapore, **2022**, [http://dx.doi.org/10.1007/978-981-16-8399-2\\_4](http://dx.doi.org/10.1007/978-981-16-8399-2_4)
31. R. Gujarappa, A. K. Kabi, S. Sravani, A. Garg, N. Vodnala, U. Tyagi, D. Kaldhi, V. Singh, S. Gupta, **C. C. Malakar** “Overview on Biological Activities of Thiazole Derivatives” *Springer Nature*, Singapore, **2022**, [http://dx.doi.org/10.1007/978-981-16-8399-2\\_5](http://dx.doi.org/10.1007/978-981-16-8399-2_5)
32. R. Gujarappa, A. K. Kabi, S. Sravani, A. Garg, N. Vodnala, U. Tyagi, D. Kaldhi, R. Velayutham, V. Singh, S. Gupta, **C. C. Malakar** “Overview on Biological Activities of Imidazole Derivatives” *Springer Nature*, Singapore, **2022**, [http://dx.doi.org/10.1007/978-981-16-8399-2\\_6](http://dx.doi.org/10.1007/978-981-16-8399-2_6)
33. A. K. Kabi, S. Sravani, R. Gujarappa, A. Garg, N. Vodnala, U. Tyagi, D. Kaldhi, V. Singh, S. Gupta, **C. C. Malakar** “Overview on Biological Activities of Pyrazole Derivatives” *Springer Nature*, Singapore, **2022**, [http://dx.doi.org/10.1007/978-981-16-8399-2\\_7](http://dx.doi.org/10.1007/978-981-16-8399-2_7)
34. A. K. Kabi, S. Sravani, R. Gujarappa, A. Garg, N. Vodnala, U. Tyagi, D. Kaldhi, R. Velayutham, V. Singh, S. Gupta, **C. C. Malakar** “An Overview on Biological Evaluation of Tetrazole Derivatives” *Springer Nature*, Singapore, **2022**, [http://dx.doi.org/10.1007/978-981-16-8399-2\\_8](http://dx.doi.org/10.1007/978-981-16-8399-2_8)
35. A. K. Kabi, S. Sravani, R. Gujarappa, A. Garg, N. Vodnala, U. Tyagi, D. Kaldhi, V. Singh, S. Gupta, **C. C. Malakar** “An Overview on Biological Activity of Benzimidazole Derivatives” *Springer Nature*, Singapore, **2022**, [http://dx.doi.org/10.1007/978-981-16-8399-2\\_9](http://dx.doi.org/10.1007/978-981-16-8399-2_9)
36. R. Gujarappa, S. Sravani, A. K. Kabi, A. Garg, N. Vodnala, U. Tyagi, D. Kaldhi, V. Singh, S. Gupta, **C. C. Malakar** “An overview on Biological Activities of Oxazole, Isoxazoles and 1,2,4-oxadiazoles Derivatives” *Springer Nature*, Singapore, **2022**, [http://dx.doi.org/10.1007/978-981-16-8399-2\\_10](http://dx.doi.org/10.1007/978-981-16-8399-2_10)
37. A. K. Kabi, S. Sravani, R. Gujarappa, A. Garg, N. Vodnala, U. Tyagi, D. Kaldhi, V. Singh, S. Gupta, **C. C. Malakar** “An Overview on Biological Activities of 1,2,3-Triazole Derivatives” *Springer Nature*, Singapore, **2022**, [http://dx.doi.org/10.1007/978-981-16-8399-2\\_11](http://dx.doi.org/10.1007/978-981-16-8399-2_11)
38. A. K. Kabi, R. Gujarappa, A. Garg, A. Roy, A. Sahoo, S. Gupta, **C. C. Malakar** “Overview on Medicinal Impacts of 1,2,4-Triazole Derivatives” *Springer Proceedings in Materials*, **2022**, Springer International Publishing, DOI : 10.1007/978-981-19-2572-6\_5



39. (A. K. Kabi, R. Gujjaraappa, A. Garg, A. Roy, A. Sahoo, S. Gupta, **C. C. Malakar** “Overview on Diverse Biological Activities of Benzisoxazole Derivatives” *Springer Proceedings in Materials*, **2022**, Springer International Publishing, DOI: 10.1007/978-981-19-2571-9
40. A. K. Kabi, R. Gujjaraappa, A. Garg, A. Roy, A. Sahoo, S. Gupta, **C. C. Malakar** “Highlights on Biological Activities of 1,3,4-Thiadiazole and Indazole Derivatives” *Springer Proceedings in Materials*, **2022**, Springer International Publishing, DOI: 10.1007/978-981-19-2572-6
41. Fabrication of vacuum evaporated  $(\text{Cu}_{1-x}\text{Ag}_x)_2\text{ZnSnSe}_4$  thin film photovoltaic devices and its photoconversion efficiency, J. Henry, and G. Sivakumar, K. Mohanraj, **S. Nagarajan**. (*Arabian Journal of Science and Engineering* **2022**).
42. In-situ formation of 2H phase  $\text{MoS}_2$ /cerium-zirconium oxide nanohybrid for potential electrochemical detection of an anti-cancer drug flutamide S. V. Selvi, N. Nataraj, T. W. Chen, **S. Nagarajan**, C. S. Ko, T. Tseng, C. Huang (*Materials Today Chemistry* **2022**)
43. Investigation on the mechanical properties of ramie/kenaf fibers under various parameters using GRA and TOPSIS methods S. P. Ganesan S. Ganesh, S. K. Ramakrishnan, V. Palani, M. Sundaram, **S. Nagarajan** *Journal: Polymer Composites* **2021** Publisher: Wiley Pages: 1-14
44. Corrosion inhibitive evaluation and DFT studies of 2-(Furan-2-yl)-4,5-diphenyl-1H-imidazole on mild steel at 1.0M HCl Natarajan R Loganathan K. T, Venkatesan S., Thimmakondur, **Nagarajan. S** *Journal: Journal of Indian Chemical Society* **2021** Publisher: Elsevier Pages: 1-8
45. Controlled phase synthesis of  $\text{V}_m\text{O}_n$  in differing oxidation states using a simplified formic acid process, quantified with a new generalized index designed for use with public domain material process information Henam Sylvia Devi, Akshita Mishra, Md Samim Reza, Parvez Akhtar, Henam Premananda Singh, Thiyam David Singh, Madhusudan Singh *Green Chemistry RSC*, 2021,**23**, 8200-8211.
46. Isolation and identification of Dye pigments from dye Plants and Its Application as edible food colorant and vegetable dyes, Purnima Laishram, Sanjram Nomita Devi, Victor Singh Ayam, ChandiCharanMalakar and Wangkheirakpam Sujata, *Journal of Bioresearch Paper* 2022
47. Luminescence enhancement and tunable colour emission in Eu/Dy/Sm codoped  $\text{CaW}_{1-x}\text{MoxO}_4$  phosphor Dhanapriya Devi Yengkhom, Goutam Singh Ningombam, **Thiyam David Singh**, Francis AS Chipem and Nongmaithem Rajmuhon Singh, *Inorganic Chemistry Communications*, 141(2022)109571
48. Optical Absorption, Kinetics and Thermodynamic Studies of Pr(III) and Nd(III) Ions with N-Acetyl L-Cysteine in Presence of Ca(II) ions Thiyam Samrat Singh and Thiyam David Singh, *Asian Journal of Chemistry*; 34(2) (2022), 272-278
49.  $\text{Bi}^{3+}$  sensitized  $\text{Gd}_2\text{O}_3:\text{Eu}^{3+}$ : A potential red phosphor for UV LED pumped white light emission O. Shantajit Singh, Ranjoy Wangkhem, N. Yaiphaba, Th. David Singh, N. Shanta Singh, *Journal of Alloys and Compounds*, 902 (2022) 163831-42
50. Controlled phase synthesis of  $\text{V}_m\text{O}_n$  in differing oxidation states using a simplified formic acid process, quantified with a new generalized index designed for use with public Henam Sylvia Devi, Akshita Mishra, Md Samim Reza, Parvez Akhtar, Henam Premananda Singh, Thiyam David Singh, Madhusudan Singh, *Green Chemistry*, 23(20)(2021)8200-8211.

## Publication in Conferences (2021-22) NA

## Publications in Books/ book chapters (2021-22)

1. D. Musib, M. Pal, U.S. Allam, **M. Roy\***, “Brief History, Pathophysiology, Transmission of SARS-CoV-2 Virus, and Recent Advances on Transition Metal Complexes and Nanocomposites as the Potent Antiviral Agents from COVID-19 Perspectives”, *Nanostructured Biomaterials* (ISBN:978-981-16-8398-5), Springer, 2022, 1-48 ([https://doi.org/10.1007/978-981-16-8399-2\\_1](https://doi.org/10.1007/978-981-16-8399-2_1)).
2. Emerging nano-structured metal oxides for detoxification of organic pollutants towards environmental remediation: Overview and future aspects **S. Nagarajan**, J.N. Jebaranjitham, B.G. Kumar, and D. Manoj

Book: Inorganic Materials for Energy, Medicine and Environmental Remediation Year: 2021, Chapter 7  
 Publisher: Springer Nature

3. Plastic and e-waste, **S. Nagarajan**, L. Chungkholen Kom Solid Waste Management, Chapter 27, Page 323, 2022.
4. Synthesis and Characterization of LFOBFO Multiferroic Nanocomposites Ayekpam Kiranjit Singh, **T. H. David Singh** and Ibetombi Soibam, Book Chapter, **NANOSTRUCTURED SMART MATERIALS**, Chapter no 13, 2022, Page no. 193-202, published by Taylor and Francis Group

### Short term Course / Workshop / Seminar /Conference Conducted by the Department NA

#### Internship or Industrial Visits:

Four M.Sc students at the Department of Chemistry have been awarded with SRPF - 2022 by **Indian Academic of Sciences**.

1. Sourav Banerjee - Enrolment No. 21302006
2. Moubani Mukherjee - Enrolment No. 21302010
3. Nicholas Thongbam - Enrolment No. 21302003
4. Krushnapriya Samantara - Enrolment No. 21302015

#### Name of Ph.D. Students who graduated in 2021-22

Sl.No	Enrolment No	Name of the Student	Thesis Name	Name of the Supervisor / Co-Supervisor	Date of Defence
1.	16402002	Dr. Dulal Musib	Photo-chemical, theoretical and photocytotoxic evaluation of selected copper(II), Manganese(0) and Lanthanum (III) complexes	Dr. Mithun Roy	01-12-2021
2	16PCH001	Dr. Dhananjaya Kaldhi	Efficient Catalytic transformation towards Important N-Heterocycles and conjugated 1,3-Diynes and Enynes	Dr. Chandi Charan Malakar	31/01/2022
3	16402003	Dr. Raghuram Gujjarappa	Development of Divergent Organic Transformations towards the Synthesis and Functionalization of Bioactive Molecules"	Dr. Chandi Charan Malakar	31/01/2022

#### No. of GATE/NET qualified students in 2021-22

Sl.No	Number of Student
1.	4 Students Cleared GATE

## Other Activities:

### Dr. Chandi Charan Malakar:

STTP	1 (AICTE sponsored)
Workshop	1 (NEP)

## List of Research Activities Highlighted in Scientific Magazines/Reports/Scientific Forum:

- (1) The following research findings have been highlighted in *Organic Chemistry Portal* **2022** (<https://www.organic-chemistry.org/abstracts/lit8/184.shtm>) A. K. Kabi, R. Gujjarappa, A. Roy, A. Sahoo, D. Musib, N. Vodnala, V. Singh, and **C. C. Malakar** “*Transition Metal-Free Transfer Hydrogenative Cascade Reaction of Nitroarenes with Amines/Alcohols: Redox-Economical Access to Benzimidazoles*” *J. Org. Chem.* **2021**, DOI: <https://doi.org/10.1021/acs.joc.1c01450>

## List of Awards/Placement received by Students

1. Mr. Raghuram Gujjarappa (Ph.D student of Dr. C. C. Malakar) has awarded the postdoctoral position at Technion - Israel Institute of Technology, Israel.
2. Ms. Ragini Sengupta (M.Sc Project student of Dr. C. C. Malakar) has awarded the Ph.D position at Karlsruhe Institute of Technology, Germany.
3. Mr. Anupam Roy (M.Sc Project student of Dr. C. C. Malakar) has awarded the Ph.D position at RWTH Aachen University, Germany.

## Dr. Nagarajan. S:

1. NEP-2020 program, talk and interaction with JNV School students March 2022
2. Invited talk at SRM Deemed to be University June 2022
3. One day Seminar on Science and Spiritual Quest July 2022 (Coordinator)
4. Invited talk at SRM Valliammai Engineering College & Technology July 2022
5. Invited talk at Manipur University, ABCs-2022 August 2022

## Dr. Sujata:

1. Invited International talk in international e-Conference on Traditional Medicine april 22, 2022 titled Traditional medicinal knowledge in quest for drug from natural sources and Manipur traditional Knowledge by United Research Forum UK.
2. Invited talk in Workshop on Medicinal and aromatic plants, 2022 titled Traditional medicinal plants by MSME and Life Science Department Manipur University.



## 4.8 DEPARTMENT OF MATHEMATICS

### Academic Department

Name of the Department : Mathematics

Head of Department : Dr. Chanam Barchand Singh

### Brief Introduction of the Department

Department of Mathematics was bifurcated from the Department of Basic Sciences and Humanities in the year 2016. Currently, the Department has only 4 regular faculties comprising 2 Associate Professors and 2 Assistant Professors. The faculties of the Department not only teach courses of M. Sc Mathematics and Computing, but also teach engineering Mathematics 1, 2, 3 in all 5 Engineering Branches, Numerical Methods in Electrical, Civil, Mechanical and Computer Science Branches, Probability and Random Process in Computer Science and Electronics and Communication Branches, Optimization in Computer Science Branches, Higher Engineering Mathematics and Optimization of first and second semesters of M. Tech Mechanical. Besides, faculties are engaged in supervising M.Sc Mathematics and Computing Projects I and II and Ph.D. Scholars.

### Highlight of Research Activities

The Department offers PhD programme in Pure and Applied Mathematics, particularly in Fix point theory, Complex analysis, Numerical Analysis, Cosmology, etc.

### Faculty Details (Regular): 04

Sl. No	Name of the Faculty	Designation	Qualification (with the last institution)	Email
1	Dr. Yumnam Rohen Singh	Associate Professor	M. Sc., Ph. D. (Manipur University)	rohen@nitmanipur.ac.in
2	Dr. Chanam Barchand Singh	Associate Professor	M. Sc., Ph.D. (Jamia Millia Islamia, Delhi)	barchand_2004@yahoo.co.in
3	Dr. Sanasam Suren Singh	Assistant Professor	M. Sc., Ph. D. (Manipur University)	ssuren.mu@gmail.com
4.	Dr. Sunil Panday	Assistant Professor	M. Sc., Ph. D. (MANIT bhopal)	sunilpanday@hotmail.co.in

### Faculty Details (Contractual): Nil

### Non-Teaching Staff (Contractual): Nil

### Academic Activities

## Students Enrolment

Name of the Course	1st Year	2nd year	Total
M.Sc Mathematics and Computing	13	8	21

## Ph.D. Program

No. of Full Time	21
No. of Part-Time	05
Total	26
Degree awarded in 2021-22	3

## Research Information (2021-22)

(A) Sponsored Research Projects from Govt./Semi Govt (2021-22) : Nil

Patent Details if any: (2021-22) : Nil

## Publication in Journals (2021-22)

Sl. No	Authors names	Title of the paper	Name of the journal	Vol (issue), Pages, Years	SCI/SCOPUS/ Others
1	Shanu Poddar and <b>Yumnam Rohen</b>	Generalised Rational $\alpha$ -Meir-Keeler Contraction Mapping in S-metric Spaces,	<i>American Journal of Applied Mathematics and Statistics</i>	9(2), 48-52, 2021,	<b>Others</b>
2	Laishram Shanjit and <b>Yumnam Rohen</b>	Non-convex proximal pair and relatively nonexpansive maps with respect to orbits	<i>Journal of Inequalities and Applications</i>	124, 2021	<b>SCIE</b>
3	Thounaojam Stephen, <b>Yumnam Rohen</b> , Nabil Mlaiki, Mairembam Bina, Nawab Hussain and Doaa Rizk	On fixed points of rational contractions in generalized parametric metric and fuzzy metrics spaces	<i>Journal of Inequalities and Applications</i>	125, 2021	<b>SCIE</b>
4	Thounaojam Stephen, <b>Yumnam Rohen</b> , Naeem Saleem, Mairembam Bina Devi and K. Anthony Singh	Fixed Points of Generalized $\alpha$ -Meir-Keeler Contraction Mappings in Sb-Metric Spaces	<i>Journal of Function Spaces</i>	Volume 2021, Article ID 4684290, 8 pages	<b>SCIE</b>
5	Thounaojam Indubala, <b>Yumnam Rohen</b> , Mohammad Saeed Khan and Nicola Fabiano	Common coupled fixed point theorems for a pair of Sb-metric spaces	<i>Journal of Siberian Federal University. Mathematics &amp; Physics</i>	2(3), 1–5, 2021	<b>SCOPUS</b>
6	Thounaojam Stephen, <b>Yumnam Rohen</b>	Fixed points of generalized rational $(\alpha, \beta, Z)$ -contraction mappings under simulation functions	<i>J. Math. Computer Sci.</i>	24 (2022), 345–357.	<b>Others</b>
7	Ningthoujam Priyobarta, <b>Yumnam Rohen</b> , Stephen Thounaojam and Stojan Radenovi	Some remarks on $\alpha$ -admissibility in S-metric spaces	<i>Journal of Inequalities and Applications</i>	34, 2022 <a href="https://doi.org/10.1186/s13660-022-02767-3">https://doi.org/10.1186/s13660-022-02767-3</a> .	<b>SCIE</b>
8	Thounaojam Stephen, <b>Yumnam Rohen</b> , M. Kuber Singh and Konthoujam Sangita Devi	Some rational F-contractions in b-metric spaces and fixed points	<i>Nonlinear Functional Analysis and Applications</i>	27( 2), 309-322, 2022	<b>SCOPUS</b>

9	Moirangthem Kuber Singh, Thounaojam Stephen, Konthoujam Sangita Devi, <b>Yumnam Rohen</b>	New generalized rational $\alpha^*$ -contraction for multivalued mappings in b-metric space	<i>J. Math. Comput. Sci.</i>	12:87,2022	<b>Others</b>
10	Waikhom henarita Chanu, Sunil Panday	Excellent Higher Order Iterative Scheme for Solving Non-linear Equations	IAENG International Journal of Applied Mathematics,	52(1), 131-137, Feb 2022.	<b>SCOPUS</b>
11	Ekta Sharma, <b>Sunil Panday</b>	Efficient sixth order iterative method free from higher derivatives for nonlinear equations	Journal of Mathematical and Computational Science	12(1) pages 13 Jan 2022	<b>Others</b>
12	Waikhom henarita Chanu, <b>Sunil Panday</b> , Mona Dwivedi	New Fifth Order Iterative Method for Finding Multiple Root of Nonlinear Function	Engineering Letters	29(3), 942-947, August 2021.	<b>SCOPUS</b>
13	<b>Barchand Chanam</b> , Khangembam Babina Devi, Kshetrimayum Krishnadas, Maisnam Triveni Devi	On Maximum Modulus of Polynomials with Restricted Zeros	Bulletin of Iranian Mathematical Society	<a href="http://doi.org/10.1007/s41980-021-00575-x">http://doi.org/10.1007/s41980-021-00575-x</a> , 2021	<b>SCIE</b>
14	Kshetrimayum Krishandas, Reingachan Ngamchui, <b>Barchand Chanam</b>	Generalized and Extended Versions of <u>Ankeny-Rivlin</u> and Improved, Generalized and Extended versions of Rivlin type Inequalities for $s^{\text{th}}$ Derivative of a polynomial	MDPI-Mathematics	,9, 887, 2021 <a href="https://doi.org/10.3390/math9080887">https://doi.org/10.3390/math9080887</a>	<b>SCI</b>
15	Thangjam Birkramjit Singh, <b>Barchand Chanam</b> ,	Generalizations and sharpenings of certain Bernstein and Turan types of inequalities for the polar derivative of a polynomial	Journal of Mathematical Inequalities	15(4),1663-1625, 2021	<b>SCIE</b>
16	Maisnam Triveni Devi, Kshetrimayum Krishnadas, Reingachan Ngamchui, <b>Barchand Chanam</b>	Integral Inequalities for Polar Derivative of a Polynomial	The Journal of Analysis	2021) <a href="https://doi.org/10.1007/s41478-021-00332-7">https://doi.org/10.1007/s41478-021-00332-7</a> ,	<b>Scopus</b>
17	<b>Barchand Chanam</b> , Khangembam Babina Devi, Kshetrimayum Krishnadas, Maisnam Triveni Devi	On an Inequality of S. Bernstein	Nonlinear Functional Analysis and Applications	26(2), 373-380, 2021	<b>Scopus</b>
18	<b>Barchand Chanam</b> , Reingachan Ngamchui, Khangembam Babina Devi, Maisnam Triveni Devi, Kshetrimayum Krishnadas	Some $L^4$ Inequalities for Polynomials	Nonlinear Functional Analysis and Applications	26(2), 331-345, 2021	Scopus
19	Birkramjit Singh, Kshetrimayum Krishnadas, <b>Barchand Chanam</b>	$L^r$ Inequalities for Generalized Turan-type Inequalities for Polynomials	Nonlinear Functional Analysis and Applications	399 (1), 2100037 (2021)	Scopus
20	Khangembam Babina Devi, Kshetrimayum Krishnadas, <b>Barchand Chanam</b>	$l^r$ Inequalities for Derivative of a Polynomial	Note di Mathematica	41(2),19-29, 2021	Scopus
21	Kshetrimayum Krishnadas, <b>Barchand Chanam</b>	$L^r$ Inequalities Concerning Polynomials	International Journal of Applied Mathematics	34(5), 979-994, 2021	<b>Scopus</b>

22	Thangjam Birkramjit Singh, Khangembam Babina Devi, Reingachan Ngamchui, Robinson Soraisam and <b>Barchand Chanam</b>	Lr Inequalities of Generalized Turán-type Inequalities of Polynomials	Turkish Journal of Computer and Mathematics Education	12(14), 3525-3531, 2022	Others
23	Kshetrimayum Krishnadas, <b>Barchand Chanam</b>	On Maximum Modulus of Polar Derivative of a Polynomial	Journal of Mathematical and Computational Science,	11(3), 2650-2664 (2021)	Others
24	<b>Barchand Chanam</b> , Maisnam Triveni devi, Kshetrimayum Krishnadas, Reingachan Ngamchui.	Some Integral Mean Inequalities Concerning Polar Derivative of a Polynomial	Journal of Mathematical and Computational Science	11(4), 4032-4041, (2021)	Others
25	Kshetrimayum Krishnadas, <b>Barchand Chanam</b>	On an Upper Bound for the Polar Derivative of a Polynomial.	Journal of Mathematical and Computational Science	11(5), 6491-6509, (2021)	Others
26	Reingachan Ngamchui, Thangjam Birkramjit Singh, <b>Barchand Chanam</b>	Generalization of Zygmund Type Iequalities for the sth derivative of a polynomial	Journal of Mathematical and Computational Science	11(5), 5140-5155, (2021)	Others
27	<b>Barchand Chanam</b> , Khangembam Babina Devi, Kshetrimayum Krishandas	Some Inequalities Concerning Polar Derivative of a Polynomial	International Journal of Pure and Applied Mathematics	14(1), 9-19, (2021)	Others
28	Thangjam Birkramjit Singh, Maisnam Triveni Devi, <b>Barchand Chanam</b>	Sharpening of Bernstein and Turan-type inequalities for polynomials	Journal of Classical Analysis	18(2), 137-148, (2021)	Others
29	Khangembam Babina Devi, Maisnam Triveni Devi, Reingachan N, <b>Barchand Chanam</b>	Growth of polynomials not vanishing in a disk	Journal of Mathematical and Computational Science	<b>2022, 12:17, <a href="https://doi.org/10.28919/jmcs/6864">https://doi.org/10.28919/jmcs/6864</a></b>	Others
30	Maisnam Triveni Devi, Thangjam Birkramjit Singh, <b>Barchand Chanam</b>	Improvement and generalization of polynomial inequality of T.J. Rivlin	Sao Palo Journal of Mathematical Sciences	2022, <a href="https://doi.org/10.1007/s40863-022-00300-4">https://doi.org/10.1007/s40863-022-00300-4</a>	Scopus
31	Khangembam Babina Devi, Kshetrimayum Krishnadas, <b>Barchand Chanam</b>	Some Inequalities on polar derivative of a polynomial	Nonlinear Functional Analysis and Applications	(2022) 22(1), 141-148, (2022)	Others
32	<b>Barchand</b> Khangembam Babina Devi, Thangjam Birkramjit Singh, Robinson Soraisham, <b>Barchand Chanam</b>	Growth of polynomials not vanishing inside a circle, Journal of Analysis	Journal of Analysis	<a href="https://doi.org/10.1007/s41478-022-00410-4">https://doi.org/10.1007/s41478-022-00410-4</a>	Scopus
33	<b>Barchand Chanam</b>	Bernstein Type Inequalities for Polar Derivative of Polynomial,	Turkish Journal of Computer and Mathematics Education	12(12), 3184-3188, (2022)	Others
34	<b>S. Surendra Singh</b> and S. Kiranmala Chanu	Particle production in higher-dimensional Universe with time dependent $\Lambda$ and $G$	<i>Brazilian Journal of Physics</i>	51, 1364-1370. (JULY 2021)	SCI
35	<b>S. Surendra Singh</b> and Yohenba Soibam,	Anisotropic models with generalized hybrid expansion in Brans-Dicke theory of gravity	<i>International Journal of Geometric Methods in Modern Physics</i>	18(9), 2150141 (1-20), (June 2021)	SCOPUS

36	Md Khurshid Alam and <b>S. Surendra Singh</b>	Interacting anisotropic dark energy with time dependent inhomogeneous equation of state	<i>International Journal of Nonlinear Analysis and Applications</i>	12, 2167-2180 (Dec 2021)	<b>ESCI</b>
37	<b>S. Surendra Singh</b> and L. Anjana Devi	Interacting anisotropic dark energy with hybrid expansion in $f(R, T)$ gravity	<i>New Astronomy</i>	90, 101565 (1-6), (Jan 2022)	<b>SCI</b>
38	Leishingham Kumrah, <b>S. Surendra Singh</b> and Lambamayum Anjana Devi	Leishingham Kumrah, S. Surendra Singh and Lambamayum Anjana Devi, Time dependent $G$ and $\Lambda$ cosmological model in $f(R, T)$ gravity	<i>New Astronomy</i>	93, 101760 (1-5), (Dec 2021)	<b>SCI</b>
39	Md Khurshid Alam, <b>S. Surendra Singh</b> and L. Anjana Devi	Interaction of anisotropic dark energy with generalized hybrid expansion law	<i>Advances in High Energy Physics</i>	2022, 5820222 (1-8), 2022	<b>SCIE</b>

### Publication in Conference (2021-22):

SL.No	Authors names	Title of the paper	Name of the journal	Vol (issue), Pages, Years	SCI/SCOPUS/ Others
1	<b>Barchand Chanam</b> , Khangembam Babina Devi, Kshetrimayum Krishnadas, Maisnam Triveni Devi, Thangjam Birkramjit Singh	Inequalities Concerning $s^{\text{th}}$ Derivative of a Polynomial	Journal of Physics: Conference Series	1849(1), p. 012007, (2021)	<b>Scopus</b>
2	<b>Barchand Chanam</b> , Khangembam Babina Devi, Maisnam Triveni Devi, Reingachan N, Kshetrimayum Krishnadas	On Upper Bound of the Derivative of Polynomials with restricted zeros	American Institute of Physics: Conference Proceedings	2435, 020013 (2022) ; <a href="https://doi.org/10.1063/5.0083865">https://doi.org/10.1063/5.0083865</a>	<b>SCOPUS</b>
3	Kshetrimayum Krishnadas, <b>Barchand Chanam</b>	On an Inequality of S. Bernstein	American Institute of Physics: Conference Proceedings	2435, 020012 (2022) ; <a href="https://doi.org/10.1063/5.0083562">https://doi.org/10.1063/5.0083562</a>	<b>Scopus</b>

### Publication in books/ book chapters (2021-22): Nil

Short Term course/ workshop/Seminar/ conference conducted by the Department:

SL.No	Title	Coordinator (s)	Sponsored	Date
1	“INTRODUCTION TO MATHEMATICA	STTP	Self-sponsored	27/12/2022-31/12/2021
2	“PROBABILITY AND ITS VARIOUS ASPECTS”	STTP	Self-sponsored	8/12/2021-12/12/2021
3	SOME ASPECTS OF MATHEMATICS IN TEACHING AND RESEARCH	STTP	Self-sponsored	20/11/2021-24/11/2021

### **Internship or Industrial Visits: Nil**

#### **Name of M.Sc students who graduated in 2021-22**

PARAS, MANGESH AMRUTA GAWLI, VISHAL BHARDWAJ, PRITIKA MAHAJAN, WAHIDUT ZAMAN, TONJAM THAIBEMA DEVI, NIKHIL, JEMINA LAISHRAM.

No of GATE/NET qualified students in 2021-22: **03** (GATE)

No of students who have been placed in 2021-22.

### **Other Activities:**

1. Details of NEP activity conducted by the Department in 2021- 2022:
2. Details of Faculty achievement in 2021-22:
3. Details of student achievement in 2021-22:
4. Details of Awards/ Recognition received by Faculty/Staff/students in 2021-22:
5. Details of contribution to the society:
6. Steps taken for popularization of Science and Technology among the students of Manipur.

## 4.9 DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

Name of the Head of Department : Dr. Sangeeta Laishram

Faculty Members (Regular): 01

SL. No	Name of the faculty	Designation	Qualification	Email
1	Dr. Sangeeta Laishram	Assistant Professor	Ph.D	sangeetalaishram7@gmail.com

Faculty Members (Contractual): 02

SL.No	Name of the faculty	Designation	Qualification	Email
1	H. Soni Devi	Lecturer	PhD	<a href="mailto:soni_imphal@yahoo.co.in">soni_imphal@yahoo.co.in</a>
2	R.K Diana	Lecturer	PhD	<a href="mailto:diana10rkin@gmail.com">diana10rkin@gmail.com</a>

Support staff : NIL

Number of students Admitted (2019-2020) : PhD students – 04

Publication in Journals (2021 -22)

1	Veronica Yumnam, Dr. Sangeeta Laishram. “History and Truth: Revisiting the past in Chimamanda Ngozi Adichie’s <i>Half of A Yellow Sun</i> ”, The IIS University Journal of Arts, July 2022. ISSN: 2319-5339 UGC Care Listed (Paper Accepted)
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National/ International conference (2021-22)

SL. No	Title of the conference	Level National/ International	Duration		Name of the organizer/ Secretary
			From	To	
1	International Conference on “Subaltern and Subdued Voices in Literature and Society”	International	21 <sup>st</sup> Feb, 2022	22 <sup>nd</sup> Feb, 2022	Department of English, Ideal Girls’ College, Imphal
2	International Conference on “Engineering, Social Sciences and Management: Challenges, Issues and Opportunities”	International	21 <sup>st</sup> May, 2022	22 <sup>nd</sup> Feb, 2022	Sri Balaji College of Engineering & Technology, Jaipur

Workshop/FDP/STTP (2021-22)

SL. No	Title	WS/FDP / STTP	Duration		Total number of days	Name of the organizer/ Secretary
			From	To		
1	Soft Skills and Engineering Management	STTP	3 <sup>rd</sup> December, 2021	7 <sup>th</sup> December, 2021	5	Dr. Sangeeta Laishram



### PhD completed including submitted theses (2021-22)

Sl. no.	Name of scholar	Title of the thesis	Date of submitted/ Awarded	Name of the supervisor/co-supervisor
1	Kshetrimayum Momo	The Functions of Myths and Archetypes in the Postcolonial Literatures of Africa And India	7 <sup>th</sup> January, 2022	Dr. Sangeeta Laishram
2	Khundrakpam Nirupama	Black Feminist Discourse: A Study of Toni Morrison's Selected Novels	7 <sup>th</sup> July, 2022	Dr. Sangeeta Laishram

## 5.0 CENTRALIZED SERVICES

### 5.1 PLACEMENT SESSION 2021-22 PLACEMENT RECORD 2021-22

SL. No	Company	No. of Students offered	CTC				
1	AMAZON	1	47 LPA	28	CGI	3	6.8 LPA
2	MICROSOFT	1	45 LPA	29	INFOSYS L0	6	3.6 LPA
3	NEWZERA	1	37 LPA	30	COGOPORT	1	10 LPA
4	SAMSUNG SDS L1	7	14.5 LPA	31	COMMSCOPE	1	14 LPA
5	SAMSUNG SDS L2	8	13.5 LPA	32	CDAC (BTech)	1	8.5 LPA
6	INFOEDGE	4	14.5 LPA	33	L&T ECC	7	6 LPA
7	PUBLIC SAPIENTS	7	10 LPA	34	BYJUS L1	1	4.8 LPA
8	TIGER ANALYTICS	2	10 LPA	35	SAMSUNG SDS L0	8	3.6 LPA
9	PURE SOFTWARE	4	9 LPA	36	COGNIZENT	9	6.75 LPA
10	DELOITTE	5	7.6 LPA	37	TEKSYSTEMS GLOBAL SERVICES	1	6 LPA
11	INFOSYS (HACKS WITH INFY)	1	8 LPA	38	TCS	3	9 LPA
12	INFOSYS (HACKS WITH INFY)	1	5 LPA	39	MCKINLEY & RICE	1	10 LPA
13	KANTAR	1	7.15 LPA	40	L&T TECHNOLOGY SERVICES	1	4 LPA
14	TALENT RECRUIT SOFTWARE	1	6.5 LPA	41	COMVIVA	1	6.5 LPA
15	CAPGEMINI	10	7.5 LPA	42	TATA POWER	2	6.06 LPA
16	LTI L1	1	8 LPA	43	BHARAT ELECTRONICS LIMITED	6	11.04 LPA
17	LTI L2	1	5 LPA	44	BYJUS L2	1	6 LPA
18	INFOSYS L1	1	9.5 LPA	45	ITC INFOTECH	6	5.25 LPA
19	INFOSYS L2	1	6.5 LPA	46	VASSAR LABS	1	6 LPA
20	IBM	2	7.5 LPA	47	ABB	5	7.5 LPA
21	ALSTOM	1	6.5 LPA	48	JSW	2	8 LPA
22	CAVISSON	1	4.5 LPA	49	Suzuki Motors	3	5.75 LPA
23	PIE INFOCOMM	2	4.5 LPA	50	Indradhanush Gas Grid Limited	2	8 LPA
24	VIRTUSA L1	1	6.5 LPA	51	TEGA INDUSTRIES	1	6.5 LPA
25	VIRTUSA L2	2	6 LPA	52	BNY Melon	1	17.35LPA
26	FIAT INDIA AUTOMOBILE	2	5 LPA	53	WIPRO	1	3.5 LPA
27	MINIORANGE	1	12 LPA	54	TIGER ANALYTICS	2	10 LPA
				TOTAL 147			

#### BTECH 2021-22 BATCH

SL. No.	Salary	Lakhs per annum	Total Student placed
1	Average Salary	9.7 LPA	147
2	Highest Salary	47 LPA (AMAZON)	

## 5.2 CENTRAL LIBRARY, NIT MANIPUR

### Annual report for the year 2021-22

Year of Establishment : 4<sup>th</sup> march, 2011  
 Strength of the staff : 07 (05-Library professional, 02– non –professional)

### Award Received:

#### Highest Usage of Science Direct amongst New NITs(2014)

Wiley Library awards for upcoming Academic Library Award, January 20<sup>th</sup> 2016

ONLINE JOURNALS AND ONLINE BOOKS AVAILABLE IN NITM: -

Elsevier eBooks 2013	
Subject Collection	Number of Journals
Computer Science	415
Engineering	473
Total	888
Springer eBooks 2013	
Computer Science	2645
Engineering	1763
Total	4408
CRC eBooks 2013	
Chemistry netbase	125
Computer Science netbase	85
ENGnetbase	228
Mathematics	98
Physics	114
Total	640
PEARSON eBooks 2014	
Computer Science, Engineering, Mathematics, Physics, General, Environmental studies, Business & Economics	2173
Details of E-Journal under TQUIP-III	
(1) IEEE transaction(2) IEEE ebooks(3) Elsevier/Science Direct e-journals(4) RSC e-journals (5) Springer Nature e-books(6) Elsevier Reaxys scientific database	

### Total number of online Books available in National Institute of Technology Manipur = 8109

Magazines : 24  
 Newspapers : 05(both national and local)  
 Internet connectivity : Available

### Staff in position- 07 ( 1 regular employee and 6 contract employees)

Sl. No.	Name	Designation	Qualification	Remark
1.	<b>Dr. Naorem Vidyavati Devi</b>	Assistant Librarian	BSc, MLIS,CCCA, PGDCA, Ph.D.	Published work- nearly 30 papers were published in Seminars/ Conference Volumes, Journals (including both national and international), Local and Festschrift volume. Organized- 03 National Workshop Organized-7 Awareness programme(Institutional level)
2.	<b>Moirangthem Rakesh Singh</b>	Library Assistant	MLIS, CCCA	Published Work- 2 papers (01 in bulletin and 01 in Conference Volume)
3.	<b>Chanambam Victoria Devi</b>	Library Attendant	BSC, PGDCA	–
4.	<b>Y.K. Katini</b>	Library Attendant	BA, DCA	–
5.	<b>R.K. Rajeshwori Devi</b>	Junior Library Assistant	MLIS	Published work- 3 papers
6.	<b>Kh. Hammerjit Singh</b>	Library Assistant	MLIS, DCA	Published work- 4 papers Organized 01 National Workshop as event Manager
7.	<b>N. Bitankumar Singh</b>	Library Assistant	MLIS	Published work- 2 papers Organized 01 National Workshop as event Manager

### At a Glance

1. The Library, under the illuminating guidance of the Competent Authorities in this short period of time, the Library NIT, Manipur has procured most of the basic Library equipments, furniture and stationary items.
2. NIT Manipur, Library has organized 2 day National Author Workshop on the theme “**Inside a Publishers’ Mind**”, 3<sup>rd</sup> & 4<sup>th</sup> July, 2017.
3. Those in the higher authority in the Institute are whole heartedly committed in the development of the Library in all possible ways.
4. Library, NIT, Manipur, has a large scope of developing its service and provides the same to the users.
5. Though Saturday is a holiday for the Institution, the library functions on Saturday for 2-3 hrs, except 2<sup>nd</sup> Saturday, in the interest of the institution in general and of the student community in particulars.
6. So far, NIT Manipur, Library has organized two days National\ Workshop, 7 User Awareness cum Demonstration Programme on access to e-resources with subject experts from outside the State to enable both faculty and students of the Institution to use this facilities.
7. The NITM Library, under the illuminating guidance of the Director, NITM, had organized a “Three Days (3<sup>rd</sup> to 5<sup>th</sup> October, 2013) BOOK Exhibition Programme” at NITM campus in which 12 book firms participated.

### 5.3 Students Residential Facilities

The Institute is a fully residential Institute. NIT Manipur is able to provide hostel accommodation to every student on twin sharing basis. The Institute has 2 (two) Boys Hostels. In addition a Girls Hostel is also located inside the Campus. Games and Sports facilities are provided inside the campus.

## 6.0 BOG, FC, BWC & Senate

### 6.1 BOARD OF GOVERNORS

1.	<b>Prof. (Dr.) Goutam Sutradhar</b> Director, NIT Manipur	Chairman (Ex-Officio)
2.	Joint Secretary dealing with Technical Education or his representatives, Dept. of Higher Education, Ministry of Education, GoI.	Member
3.	Financial Advisor or his/her representatives, Dept. of Higher Education, Ministry of Education, GoI.	Member
4.	Prof.Uday Shanker Dixit, Mechanical Engineering Deptt., IIT Guwahati	Nominated member Director of IIT Guwahati
5.	Council Nominee	Member (vaccant)
6.	Council Nominee	Member (vaccant)
7.	Government of Manipur Nominee	Member (vaccant)
8.	Government of Manipur Nominee	Member (vaccant)
9.	Dr. P. Albino Kumar, Assoc. Prof.(Civil) NIT Manipur	Member
10.	Prof. Rajesh Kumar Bhushan, Prof. (Mechanical) NIT Manipur	Member
11.	Registrar, NIT Manipur	Secretary

### 6.2 FINANCE COMMITTEE

1.	<b>Prof. (Dr.) Goutam Sutradhar</b> Director, NIT Manipur	Chairman (Ex-Officio)
2.	Joint Secretary dealing with Technical Education or his representatives, Dept. of Higher Education, Ministry of Education, GoI.	Member
3.	Financial Advisor or his/her representatives, Dept. of Higher Education, Ministry of Education, GoI.	Member
4.	Dr. P. Albino Kumar, Assoc. Prof.(Civil) NIT Manipur	Member
5.	Prof. Rajesh Kumar Bhushan, Prof. (Mechanical) NIT Manipur	Member
6.	Registrar, NIT Manipur	Member Secretary

### 6.3 BUILDING & WORKS COMMITTEE

1	Prof. (Dr) Goutam Sutradhar, Director, NIT Manipur	Chairman
2	Director or Deputy Secretary or his representative dealing with National Institute of Technology in the Ministry of Education, Govt. of India	Member

3	Director or Deputy Secretary or his representative dealing with Financial Dept. of Higher Education , Ministry of Education,Govt. of India	Member
4	Dy. General Manager/Executive Engineer, MSPDCL, Electricity Complex, Keishampat Junction, Imphal	Member
5	Executuve Engineer (Civil) or his /her representative, Manipur Central Division , CPWD, Imphal	Member
6	Dr. P. AlbinoKumar, Dean (P & D), NIT Manipur	Member
7	Registrar (i/c), NIT Manipur	Member Secretary

## 6.4 SENATE

1.	Prof. (Dr.) Goutam Sutradhar Director, NIT Manipur	Chairman (Ex- Officio)
2.	Prof. Chiranjib Bhattacharjee Jadavpur University	Nominated Member
3.	Prof. L.Memcha Manipur University	Nominated Member
4.	Dr. Debasish Bhattacharjee NIT Agartala	Nominated Member
5.	Dr. Jinsu Basu Saha Institute of Nuclear Physics, Kolkata	Distinguished Invitee
6.	Dr. Prabir Kumar Mukhopadhyay Damodar Valley Corporation	Distinguished Invitee
7.	Dean (Academic Affairs)	Member
8.	All Professors of NIT Manipur appointed as per Statutes	Member
9.	All Head of Departments of NIT Manipur	Member
10.	Registrar, NIT Manipur	Secretary





कार्यालय प्रधान महालेखाकार (लेखापरीक्षा), मणिपुर, इम्फाल - ७९५००१  
**OFFICE OF THE PRINCIPAL ACCOUNTANT GENERAL (AUDIT)**  
**MANIPUR, IMPHAL - 795 001**

Phone: 0385 - 2458523

E-mail: [agaumanipur@cag.gov.in](mailto:agaumanipur@cag.gov.in)

No. PAG(Au)/AB-LB/93/DSAR/NIT/22-23/218

Dated: 06.01.2023

To,

The Addl. Secretary and Financial Advisor,  
Department of Higher Education,  
Ministry of Human Resource Development,  
Shastri Bhavan, New Delhi - 110 001.

Subject: - Audit Report on the accounts of the National Institute of Technology,  
Manipur, Imphal for the year 2021-22.

Sir,

I am to forward herewith the Audit Report on the Accounts of the National Institute of Technology, Manipur, Imphal for the year 2021-22 and to request the Government to make necessary arrangements to place the Audit Report before the Parliament.

The Report may be kept confidential till it is placed before the Parliament.

Encl: As stated above.

Yours faithfully,

Sd/-

Sr. Deputy Accountant General (Audit)

Memo No. PAG(Au)/AB-LB/93/DSAR/NIT/22-23/219-20

Dated: 06.01.2023

Copy forwarded to:-

1. The Principal Director (AB), O/o the Comptroller and Auditor General of India,  
9, Deen Dayal Upadhyay Marg, New Delhi-110124
2. The Director, National Institute of Technology, Manipur, Imphal with a copy of the  
Audit Report on the Accounts.

[He is requested to make necessary arrangements to submit the Audit Report to the concerned Ministry of Government of India under section 22(4) of the National Institute of Technology Act, 2007. He is further requested to intimate to this Office the date of placing of the Audit Report before the Parliament. Arrangements may please be made to translate the Report in Hindi and place the Report before the Parliament through the concerned Ministry. 10 (ten) copies of the printed Report placed before the Parliament may be forwarded to this Office. The Report may be kept confidential till it is placed before the Parliament.]

Sr. Audit Officer (AMG - I)

## **Separate Audit Report on the Accounts of National Institute of Technology, Manipur, for the year ended 31 March 2022**

1. We have audited the attached Balance Sheet of National Institute of Technology (NIT), Manipur as of 31 March 2022 and the Income and Expenditure Account and Receipts and Payments Account for the year ended on that date under Section 19(2) of the Comptroller and Auditor General's Duties, Powers and Conditions of Service (DPC) Act, 1971 read with Section 22(2) of NIT Act, 2007. These financial statements are the responsibility of the Institute's Management. Our responsibility is to express an opinion on these financial statements based on our audit.

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

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

4. Based on our audit, we report that:

- i. We have obtained all the information and explanations, which to the best of our knowledge and beliefs were necessary for the purpose of our audit;
- ii. The Balance Sheet, Income and Expenditure Account and Receipts and Payments Account dealt with by this report have been drawn up in the format prescribed by the Ministry of Human Resource Development;
- iii. In our opinion, proper books of accounts and other relevant records have been maintained by the NIT, Manipur, Imphal, as required under the Rules in so far as it appears from our examination of such books.
- iv. We further report that-



## **A. BALANCE SHEET**

### **A.1 SOURCES OF FUND**

#### **3: Current Liabilities: ₹ 24,35,32,759.73**

The above reflects the total Current Liabilities of the Institute as on 31 March 2022. Scrutiny of the records and accounts however revealed that the amount does not include unutilized Grants amounting to ₹ 70,76,50,794.51 which consist of unutilized Grants from Salary (36) amounting to ₹ 24,23,43,243.64 and balance of Grants towards General (31) amounting to ₹ 46,53,07,550.87. Details are given below-

(Amount in ₹)

Particulars	Salary (36)	General (31)	Total
Balance B/F	26,21,58,848.64	36,49,27,332.87	62,70,86,181.51
Add: Receipt during the year	8,73,38,000.00	21,29,44,000.00	30,02,82,000.00
<b>Total</b>	<b>34,94,96,848.64</b>	<b>57,78,71,332.87</b>	<b>92,73,68,181.51</b>
Less: Utilized for Capital expenditure (A)	-	-	-
<b>Balance</b>	<b>34,94,96,848.64</b>	<b>57,78,71,332.87</b>	<b>92,73,68,181.51</b>
Less: Utilized for Revenue expenditure (B)	10,71,53,605.00	11,25,63,782.00	21,97,17,387.00
<b>Balance C/F (C)</b>	<b>24,23,43,243.64</b>	<b>46,53,07,550.87</b>	<b>70,76,50,794.51</b>

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

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

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

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

Audit observed that Internal Revenue Generation (IRG) utilized for Capital expenditure during the years have been brought down and adjusted with Grants received by the Institute over the years giving rise to incorrect negative balance of Grants.

This has resulted in understatement of Current Liabilities by ₹ 70,76,50,794.51 and overstatement of expenditure by the same amount.

### **A.2 APPLICATION OF FUNDS**

#### **3: Investments- Others: ₹ 5,04,905.07**

The above depicts the total investment of the institute as on 31 March 2022. Scrutiny of the records however revealed that the actual value of investment on ICICI Prudential Mutual Fund was ₹ 2,51,763.57. The Net Asset Value (NAV) of the investment amounting to ₹ 5,04,905.07 reflected in the schedule is inclusive of returns of the investment over the years.

This has resulted in overstatement of investment by ₹ 2,53,141.50 and understatement of current assets by the same amount.



## **B. INCOME AND EXPENDITURE ACCOUNT**

### **B.1 INCOME**

#### **2. Grants/ Subsidies: ₹ 30,02,82,000.00**

The above depicts the total income of the Institutes from Grants/ Subsidies during the period. Scrutiny of the accounts however revealed that the income from Grants/ Subsidies reflected in the account is incorrect. Audit observed that the actual amount of income from Grants/ Subsidies during the period is ₹ 21,97,17,387.00. Details are given in the table below-

(Amount in ₹)

Particulars	Salary (36)	General (31)	Total
Balance B/F	26,21,58,848.64	36,49,27,332.87	62,70,86,181.51
Add: Receipt during the year	8,73,38,000.00	21,29,44,000.00	30,02,82,000.00
<b>Total</b>	<b>34,94,96,848.64</b>	<b>57,78,71,332.87</b>	<b>92,73,68,181.51</b>
Less: Utilized for Capital expenditure (A)	-	-	-
<b>Balance</b>	<b>34,94,96,848.64</b>	<b>57,78,71,332.87</b>	<b>92,73,68,181.51</b>
Less: Utilized for Revenue expenditure (B)	10,71,53,605.00	11,25,63,782.00	21,97,17,387.00
<b>Balance C/F (C)</b>	<b>24,23,43,243.64</b>	<b>46,53,07,550.87</b>	<b>70,76,50,794.51</b>

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

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

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

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

As per MHRD format amount utilized for revenue expenditure is appear as income from grant and subsidies and balance of grant is appears as unutilized grant. Thus, from the table it can be seen that the total income from Grants/ Subsidies during the year was ₹ 21,97,17,387.00 in contrary to the amount of ₹ 30,02,82,000.00 reflected in the account.

This has resulted in overstatement of income and Surplus by ₹ 8,05,64,613.00 and understatement of current liabilities – utilized grant.

## **C. RECEIPTS AND PAYMENTS ACCOUNT**

*Nil*

## **D. GENERAL**

### **D.1 FORMAT OF FINANCIAL STATEMENTS FOR CENTRAL HIGHER EDUCATIONAL INSTITUTIONS**

The NIT, Manipur is yet to fully implement the Revised Formats and Schedules of Financial Statement for Central Educational Institutes (CEIs) in preparation and presentation of its Annual Financial Statements. Audit observed that the Institute:

- 1 Does not prepare Grant Schedule and Unutilized Grants schedule as per the revised Format of Accounts
- 2 Prepares provision of Employees Retirement and Terminal Benefits based on own postulation with provision calculated up to the FY 2017-18 and not as per Actuarial valuation and/ or updates.
- 3 Absence of statement of status of the Institute with regard to Income Tax provision.

4. Does not prepare proper Financial Statements for GPF.

**E. GRANTS-IN-AID**

Out of the grants-in-aid of ₹ 30.03 crore received during the year, the NIT could utilize a sum of ₹ 21.97 crore leaving a balance of ₹ 8.06 crore as unutilized grant as on 31<sup>st</sup> March 2022.

**F. MANAGEMENT LETTER**

Deficiencies which have not been included in the Audit Report have been brought to the notice of the Director of the Institute through a Management Letter issued separately for remedial/corrective action.

- v. Subject to our observations in the preceding paragraphs, we report that the Balance Sheet and Income and Expenditure Account dealt with by this report are in agreement with the books of accounts.
- vi In our opinion and to the best of our information and according to the explanations given to us, the said financial statements read together with the Accounting Policies and Notes on Accounts, and subject to the significant matters stated above and other matters mentioned in Annexure to this Audit report give a true and fair view in conformity with accounting principles generally accepted in India.
- (a) In so far as it relates to the Balance Sheet of the state of affairs of the National Institute of Technology, Manipur as at 31 March 2022; and
- (b) In so far as it relates to Income and Expenditure Account of the surplus for the year ended on that date.

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



**Pr. Accountant General (Audit),  
Manipur**

**Place: Imphal  
Date: 06.01.2023**



## **Annexure to Audit Report**

### **1. Adequacy of Internal control system**

Internal Control provides reasonable assurance to the management that financial interests and resources of the organization are safeguarded, reliable information is available and the objectives of the Institute are being achieved in an economic, efficient and effective manner. Scrutiny of the records revealed the following significant weaknesses in internal controls of the Institute-

- Non-reconciliation of records with the subsidiary records maintained by different Departments, Schools *etc.*
- Absence of manual/ system for disposal of assets.

### **2. Adequacy of Internal Audit system**

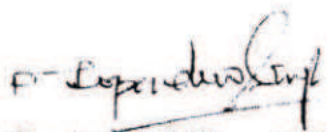
No internal audit system is exist.

### **3. System of Physical verification of Stores/Fixed Assets**

As per provisions contained in Rule 213 (1) of General Financial Rules, 2017 Fixed Assets should be verified at least once in a year and the outcome of the verification recorded in the corresponding register. Discrepancies, if any, shall be promptly investigated and brought to account. The institute did not conduct physical verification of Fixed Assets and Stores during the period. Further, Closing Balances of Stores have not been presented in the Financial Statements.

### **4. Regularity in payment of statutory dues**

The institute has been deducting and remitting statutory dues during the years. However, audit observed that there is lapse in regular and timely payment/ remittance of statutory dues. The outstanding statutory liabilities as on 31 March 2022 was ₹ 35,47,465.65 and ₹ 2,27,013.25 towards Taxes and Others and NPS respectively.

  
**Sr. Audit Officer (AMG-I)**



**NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR**

**BALANCE SHEET AS AT 31.3.2022**

<b>SOURCES OF FUND</b>	<b>Schedule</b>	<b>Current Year</b>	<b>Previous Year</b>
1 CAPITAL FUND	1	2,400,670,366.49	2,375,149,993.92
2 Designated / Earmarked/ Endowment Funds	2	-	-
3 Current Liabilities & Provisions	3	243,532,759.73	233,626,047.63
		2,644,203,126.22	2,608,776,041.55
<b>APPLICATION OF FUNDS</b>			
1 Fixed Assets	4		
a) Tangible Assets		580,159,151.13	654,303,473.13
b) Intangible assets		9,085,483.00	13,082,817.00
c) Capital Work in Progress		1,767,753,597.00	1,767,753,597.00
2 Investments from Earmarked/ Endowment Funds	5		
a) Long Term			
b) Short Term			
3 Investments - Others	6	504,905.07	435,419.10
4 Current Assets	7	280,255,681.01	166,005,075.32
5 Loans & Advances	8	6,444,309.01	7,195,660.00
		2,644,203,126.22	2,608,776,041.55

Significant Accounting Policies	24
Contingent liabilities & Notes on Account	25

Place: Imphal  
Date: 05.09.2022

**NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR**

**INCOME AND EXPENDITURE FOR THE YEAR 2021-22**

<b>INCOME</b>	<b>Schedule</b>	<b>Current Year</b>	<b>Previous Year</b>
1 Academic Receipts	9	20,011,021.60	20,687,602.27
2 Grant & Subsidies :			
a) Received	10		90,700,000.00
(i) Maintenance (31)		212,944,000.00	
(ii) Salary (36)		87,338,000.00	
b) Add : Opening balance available for Revenue Exp			
c) Less : Capital Expenses			
d) Balance available for Revenue Exp		300,282,000.00	90,700,000.00
3 Income from Investment	11	69,485.97	500,622.81
4 Interest Earned	12	4,234,004.44	5,206,451.00
5 Other Income	13	4,165,607.00	3,460,063.51
6 Prior Period Adjstments	23	0	3,797,395.00
Total (A)		328,762,119.01	124,352,134.59
<b>EXPENDITURE</b>			
1 Staff Payment & Benefit ( Establishment Exp)	15	107,153,605.00	95,660,199.00
2 Academic Expenses	16	34,825,742.00	30,052,106.00
3 Administrative & General Expenses	17	69,285,717.00	61,964,307.00
4 Transport Expenses	18	1,057,175.00	804,884.00
5 Repair & Maintenance	19	6,875,483.00	7,280,116.00
6 Finance Cost	20	35,935.44	60,485.26
7 Depreciation			
a) Depreciation for the year (SLM)	4	84,915,209.00	111,136,040.00
b) Excess Depreciation in the previous years adjusted	4		
8 Other Expenses	21	483,730.00	849,444.00
9 Prior Period exp	22		268.00
Total (B)		304,632,596.44	307,807,849.26
Balance being excess of income over Expenditure		24,129,522.57	-183,455,714.67
BALANCE being the excess of expenditure over income			
Transfer to/ from designated Fund			-
Others (Specify)			-
Balance being Surplus (Deficit) carried to Capital Fund		24,129,522.57	(183,455,714.67)
Significant Accounting Policies	24		
Contingent Liabilities & Notes on Account	25		

Place: Imphal

Date: 05.09.2022



**NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR**  
**RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31.3.2022**

RECEIPTS	Current year	Previous Year	PAYMENTS	Current year	Previous Year
I Opening Balance			I Expenses -		
a) Cash balances i/c DD in hand	439,190.00	403,620.00	a) Staff Payments & Benefit	107,153,605.00	95,660,199.00
b) Bank Balances -			b) Academic Expenses	34,825,742.00	30,052,106.00
i) in Current Account	9,647,531.26	4,658,622.35	c) Administrative Expenses	69,285,717.00	61,964,307.00
ii) In Deposit Accounts	-	128,115,014.05	d) Transportation Expenses	1,057,175.00	804,884.00
iii) In Savings Account	155,918,354.06	111,122,329.00	e) Repairs & Maintenance	6,875,483.00	7,280,116.00
	166,005,075.32	244,299,585.40	f) Finance Cost	35,935.44	60,485.26
			f) Other Expenses	483,730.00	849,712.00
II Grants Received -			II Payments made against Earmarked/	219,717,387.44	196,671,809.26
a) From Government of India		90,700,000.00			
(i) Maintenance (31)	212,944,000.00				
(ii) Salary (36)	87,338,000.00	-	Endowment funds		
b) From State Government	-	1,000.00			
( Nominal Value of land)			III Payments against Sponsored Projects		
c) From Other sources :			Projects/ Schemes	12,118,296.90	9,759,770.00
Academic Receipts	20,011,021.60	20,687,602.27	Others	12,349,000.00	11,405,940.00
Receipts against Earmarked/			CSAB		
IV Endowment Fund	-	-	IV Payments against Sponsored		
			Fellowship/ Scholarship		
V Receipts against Sponsored Projects					
/Schemes			V Investments and Deposits made		
Schedule 3(a)	19,680,713.00	11,123,119.40	a) Out of Earmarked/ Endowment		
CSAB	13,120,950.00	11,966,900.00	b) Out of own Funds	69,485.97	65,253.81
VII Income on Investments from					
a) Earmarked /Endowment Fund	-	-	VI Term Deposits with Schedule Banks		
b) Other Investments	69,485.97	65,253.81	VII Expenditure on Fixed Assets		
Interest Received on			and Capital Work in Progress		
a) Bank Deposits	-	435,369.00	a) Fixed Assets i/c advance	5,382,703.00	6,777,982.00
b) Loans & Advances	-	-	b) Capital Work in progress	-	2,500,000.00
c) Savings Bank Account	4,234,004.44	5,206,451.00	VIII Other Payments including		
			Statutory payments	674,684.00	-
Total Carried over	523,403,250.33	384,485,280.88	Total Carried over	250,311,557.31	227,180,755.07



**NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR**

**SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.3.2022**

<b>SCHEDULE -1 : CORPUS/ CAPITAL FUND</b>	<b>Current Year 2021-22</b>	<b>Previous year 2020-21</b>
1 Balance as at the beginning of the year ( from HRD and Others)	2,348,148,993.92	2,450,185,967.59
Add :During the year for Capital Expenses	-	-
2 Capital Grant from Other Ministry-MOBC b/fd	27,000,000.00	27,000,000.00
3 State Govt. - nominal value of land allotted b/fd	1,000.00	1,000.00
<b>TOTAL</b>	<b>2,375,149,993.92</b>	<b>2,477,186,967.59</b>
4 Add : Assets purchased out of Sponsored Projects where Ownership vests in the Institute capitalised	1,390,850.00	81,418,741.00
5 Add : Assets Donated / Gifts Received in Project		
6 Add : Other Additions		
7 Less : Revenue Expenditure considered out of the Grant		
8 Add/ (Deduct ) : Surplus (Deficit) transferred from Income and Expenditure Account	24,129,522.57	(183,455,714.67)
9 Balance at the end of the year	2,400,670,366.49	2,375,149,993.92



**NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR**  
Year 2021-22

**SCHEDULE - 2 : DESIGNATED / EARMARKED / ENDOWMENT FUNDS**

Refer Schedule 3(a)

A	Current Year 2021-22	Previous year 2020-21	
a) Opening Balance of the funds			
b) Additions during the year			
c) Income from Investments made of the the funds			
d) Accrued Interest on Investments/ Advances			
e) Interest on Savings Bank Account			
f) Other Additions (specify)			
(i) Subscriptions & recovery of advance			
(ii) Interest on SB a/c			

TOTAL (A)

B

Utilisation / Expenditure towards objectives of fund

i) Capital Expenditure

ii) Revenue Expenditure

TOTAL (B)

Closing balance at the end of the year (A-B)

Represented by

a) Cash and Bank Balance

bl Investments

c) Interest Accrued but not due

d) Others (Specify)

TOTAL

NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR

**SCHEDULE -2 : DESIGNATED / EARMARKED / ENDOWMENT FUNDS**

A	DASA	NMEICT	DST project for Basic Science	DST Project for Civil Dept	TOTAL Current Year	TOTAL Previous Year
a) Opening Balance of the funds						
b) Additions during the year						
c) Income from Investments made of the the funds						
d) Accrued Interest on Investments/ Advances						
e) Interest on Savings Bank Account						
f) Other Additions (specify)						
TOTAL (A)						
<b>B</b>						
Utilisation / Expenditure towards objectives of fund						
i) Capital Expenditure	-	-	-	-	-	
ii) Revenue Expenditure						
TOTAL (B)						
Closing balance at the end of the year (A-B)						
Represented by						
a) Cash and Bank Balance						
b) Investments	NIL	NIL	NIL	NIL	NIL	NIL
c) Interest Accrued but not due						
d) Others (Specify)						



NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR

SCHEDULE 2 A

ENDOWMENT FUNDS

Sub- Schedule to support the figures in the column "Endowment Funds" in the Schedule 2 forming part of the Balance Sheet

Sl	Name of the Endowment	Opening Balance		Addition During the Year			Total			Expenditure on the object during the year	Closing Balance		Total
		Endowment	Accumulated Interest	Endowment	Interest		Endowment	Accumulated Interest			Endowment	Accumulated Interest	
1	2	3	4	5	6	7= (3+5)	8= (4+6)	9	10	11 (10+11)			
	NIL	NIL	NIL	NIL	NIL								

6 Supported by

Cash at bank

Investment in Bank STDR

Reinvested Interest

Accrued Interest but not due

Int. Receivable from SBI(TDS)

Receivable -Corpus Fund

Total

Less : Liabilities

**NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR**

Year 2021-22

<b>SCHEDULE-3 : CURRENT LIABILITIES &amp; PROVISIONS</b>		<b>Current Year 2021-22</b>	<b>Previous year 2020-21</b>
<b>A CURRENT LIABILITIES</b>			
1 Deposit from Staff		-	-
2 Deposits from Students	Cautions deposit	6,215,000.00	5,575,000.00
3 Sundry Creditors			
a) For Goods & services		131,312,392.00	131,689,907.00
b) Others (CSAB)		2,853,007.00	2,081,057.00
4 Deposit Others (including Earnest Money & Security Deposit)		24,760,363.00	24,277,485.00
5 Statutory Liabilities Remittable deductions (GPF,TDS,WC Tax, GIS, NPS)			
a) Taxes and others		3,547,465.65	1,319,517.65
b) Others : NPS		227,013.25	227,013.25
6 Other Current Liabilities			
a) Salary/ Pension/ NPS			
b) Receipts against sponsored projects			
c) Receipts against sponsored fellowship & scholarships			
d) Unutilised grants ( Sponsored project)		17,957,808.09	10,110,647.99
e) Sponsored Projects TEQIP - Balance		10,296.00	-
f) Grants in advance			
g) Stale Cheque A/c		4,471,357.00	4,487,873.00
h) Other liabilities			
(i) for Expenses		3,027,141.00	2,419,305.00
(ii) Other Liabilities		34,073,197.74	36,360,522.74
(ii) Other Liability - Grant recived for remittance to others			
<b>TOTAL (A)</b>		<b>228,455,040.73</b>	<b>218,548,328.63</b>
<b>B PROVISIONS</b>			
1 For Taxation			
2 Gratuity		5,429,530.00	5,429,530.00
3 Supeannuation/ Pension			
4 Leave & Pension Contribution		1,028,825.00	1,028,825.00
6 Accumulated Leave Encashment		8,619,364.00	8,619,364.00
7 Trade Warrantees/ Claims			
8 Others (Specify)			
<b>Total (B)</b>		<b>15,077,719.00</b>	<b>15,077,719.00</b>
<b>Total (A+B)</b>		<b>243,532,759.73</b>	<b>233,626,047.63</b>

Outstanding Payable in RBI A/c [36] to IRG : 148265

Contra - Schedule 6



NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR

SCHEDULE -3(a) SPONSORED PROJECTS

2021-22

Sl No	Name of the project	Opening balance		Receipts/ Recoveries, Interest during the year	Total	Expenditure During the year	Closing balance		Previous Year
		Credit	Debit				Credit	Debit	
1	AICTE Project	140,827.00	-	231,173.00	372,000.00	208,777.00	163,223.00	-	140,827.00
2	AICTE ATAL (All)	-	-	465,000.00	465,000.00	449,596.00	15,404.00	-	-
3	Dr Ibetombi UGC Project	-	-	45,000.00	45,000.00	-	45,000.00	-	-
4	Dr Subhash R & D Project	44,806.00	-	61.00	44,867.00	44,867.00	-	-	44,806.00
5	SERB -EMRF Dr. Ibetombi	206,391.00	-	-	206,391.00	-	206,391.00	-	206,391.00
6	ISRO (RAC-S) Ms Mamata	-	-	602,292.00	602,292.00	90,000.00	512,292.00	-	-
7	DST Land Degradation Risk Assmt - Bankim	35,396.00	-	-	35,396.00	35,396.00	-	-	35,396.00
8	DST Public Health - Bankim	528,724.00	-	-	528,724.00	528,724.00	-	-	528,724.00
9	SERB 2nd Proj DR Chandi	887,822.00	-	350,531.00	1,238,353.00	1,197,116.00	41,237.00	-	887,822.00
10	ISRO Project - Mamata	36,432.00	-	-	36,432.00	36,432.00	-	-	36,432.00
11	SERB 2nd Project Dr Lenin	1,526,945.00	-	134,749.00	1,661,694.00	778,779.00	882,915.00	-	1,526,945.00
12	R & D Project Dr Shuma	74,258.00	-	8,000.00	82,258.00	81,647.00	611.00	-	74,258.00
13	Ms Sharmila Inspire Fellowship	-	-	421,760.00	421,760.00	420,910.00	850.00	-	-
14	DST Complex Fluid Flow - Lenin Physics	53,372.00	-	-	53,372.00	38,701.00	14,671.00	-	53,372.00
15	Surface Oxygen & its effect- Nagrajan	1,140,065.00	-	-	1,140,065.00	-	1,140,065.00	-	1,140,065.00
16	SERB - Modular Approach to DNA- Mithun Ro	130,285.00	-	20,617.00	150,902.00	150,902.00	-	-	130,285.00
17	BRNS Project - Mithun Roy	573,169.00	-	290.00	573,459.00	513,976.00	59,483.00	-	573,169.00
18	DST SERB Dr Tamphasara	1,717,719.00	-	118,751.00	1,836,470.00	1,805,095.00	31,375.00	-	1,717,719.00
19	Modelling of Cosmic Acceleration- Surendra	4,325.00	-	-	4,325.00	4,325.00	-	-	4,325.00
20	Dev of New Hybrid- A K Biru	38,597.00	-19,960.00	215,000.00	195,040.00	120,040.00	75,000.00	-	-19,960.00
21	DST project- S Binila Chanu	377,537.00	-	933.00	39,530.00	27,840.00	11,690.00	-	38,597.00
22	DST- CCP Dr Ng. Romanji	283.00	-	270,000.00	647,537.00	992,241.00	-	-304,704.00	377,537.00
23	DST Inspire Ng. Joseph Singh	123,243.00	-	504,703.00	504,986.00	502,544.00	2,442.00	-	283.00
24	DST Inspire Dr Biria	-	-	3,389.00	126,632.00	-	126,632.00	-	123,243.00
25	SERB -Priyobrata	-	-365,837.00	-	-	-	-	-365,837.00	-365,837.00
26	ISRO - EOAM Dr Romanji	71,430.00	-	-	71,430.00	-	71,430.00	-	71,430.00
27	Improving stability -L Herojit	229,448.00	-	-	229,448.00	-	229,448.00	-	229,448.00
28	GRIDS ACA Support/ Innovation	283,736.00	-	7,803.00	291,539.00	-	291,539.00	-	283,736.00
29	SERB - Priemkumar L	12,911.00	-	-	12,911.00	-	12,911.00	-	12,911.00
30	CMR Proj. Dr Mithun	-	-	923,536.00	923,536.00	-	923,536.00	-	-
31	TIFAC - Dr. Murali	30,397.60	-	34,756.00	65,153.60	36,280.90	28,872.70	-	30,397.60
32	UBA - 2019	730,617.00	-	376,500.00	1,107,117.00	772,106.00	335,011.00	-	730,617.00
33	SMDDP- Suraj	243,056.39	-	1,984,809.00	2,227,865.39	1,733,282.00	494,583.39	-	243,056.39
34	NECTOR Dr Albino	-	-	1,908,000.00	1,908,000.00	1,199,856.00	708,144.00	-	-
35	OTP-NIDM Dr Dinamani	-	-	150,000.00	150,000.00	113,730.00	36,270.00	-	-
36	QIP- AICTE Dr Bankim	-	-	150,000.00	150,000.00	76,450.00	73,550.00	-	-
	Sub-Total carried over	9,241,791.99	-385,797.00	8,927,653.00	18,149,484.99	11,919,612.90	6,534,576.09	-670,541.00	8,855,994.99

Continuation Schedule-3(a)		Opening balance		Receipts/ Recoveries, Interest during the year	Total	Expenditure During the year	Closing balance		Previous Year
Sl No		Credit	Debit				Credit	Debit	
	Total Carried forward	9,241,791.99	-385,797.00	8,927,653.00	18,149,484.99	11,919,612.90	6,534,576.09	-670,541.00	8,855,994.99
37	Random Verification	-	-	82,844.00	82,844.00	70,000.00	12,944.00	-	-
38	SARS - Project DR Mithun	-	-	909,648.00	909,648.00	-	909,648.00	-	-
39	SERB - Dr Mithun 3rd Project	-	-	2,054,222.00	2,054,222.00	-	2,054,222.00	-	-
40	SERB- Dr Dushyant 2nd Project	-	-	3,220,414.00	3,220,414.00	-	3,220,414.00	-	-
41	SERB - Dr Herojit 2nd Project	-	-	1,734,907.00	1,734,907.00	-	1,734,907.00	-	-
42	SERB- Dr Minhal 2nd Project	-	-	1,448,748.00	1,448,748.00	-	1,448,748.00	-	-
43	SERB - Dr Jina	-	-	1,168,879.00	1,168,879.00	1,116.00	1,167,763.00	-	-
44	Bank interest on Project a/c pending allocation	72,257.00	-	133,398.00	205,655.00	127,568.00	78,087.00	-	72,257.00
	Total (A)	9,314,048.99	-385,797.00	19,680,713.00	28,974,801.99	12,118,296.90	17,161,209.09	-670,541.00	8,928,251.99
1	DASA	635,000.00	-	-	635,000.00	-	635,000.00	-	635,000.00
2	NMEICT	161,599.00	-	-	161,599.00	-	161,599.00	-	161,599.00
	Total (B)	796,599.00	-	-	796,599.00	-	796,599.00	-	796,599.00
	Total (A-B)	10,110,647.99	-385,797	19,680,713.00	29,771,400.99	12,118,296.90	17,957,808.09	-670,541.00	9,724,850.99
	Net Balance	9,724,850.99	-385,797	19,680,713.00	29,771,400.99	12,118,296.90	17,957,808.09	-670,541.00	9,724,850.99

NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR

SCHEDULE -3 (b) SPONSORED FELLOWSHIP AND SCHOLARSHIPS

2021-22

Sl No	Name of the project	Opening balance		Receipts/ Recoveries during the year	Total	Expenditure During the year	Closing balance		Previous Year
		Credit	Debit				Credit	Debit	
	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL



**NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR**

Year 2021-22

**SCHEDULE 3 (c) UNUTILISED GRANTS FROM GOVERNMENT OF INDIA AND STATE GOVERNMENTS**

A	Government of India	A/C -31 (General)	A/C-36(Salary)	A/C- 35 (Capital Exp)	Total 2021-22	Total 2020-21
1	Unutilised Balance brought forward	364,927,332.87	262,158,848.64	-856,594,605.13	-229,508,423.62	-129,581,889.36
2	Grant Received During the Year	212,944,000.00	87,338,000.00	-	300,282,000.00	90,700,000.00
3	Total	577,871,332.87	349,496,848.64	-856,594,605.13	70,773,576.38	-38,881,889.36
4	Less : Refund	-	-	-	-	-
5	Utilised :	-	-	-	-	-
5.a	Total Expenses as per Income & Exp. /Receipts & Payment A/c	112,563,782.44	107,153,605.00	-	219,717,387.44	196,671,809.26
5.b	Decrease (increase) in Liability	2,226,299.00	4,500.00	-	2,230,799.00	-2,229,869.00
5.c	Increase (Decrease) in Advance	-751,350.99	-	-	-751,350.99	-3,815,406.00
5.d	Total Expenses Paid (5a+5b+5c)	114,038,730.45	107,158,105.00	-	221,196,835.45	190,626,534.26
6	Unutilised / overutilised Balance	463,832,602.42	242,338,743.64	-856,594,605.13	-150,423,259.07	-229,508,423.62

Note : 1                      \*\* During the year capital expenses for Rs 53,82,703.00 was incurred. The expenses was paid out of IGR as no grant was received under head -35. Hence the expenditure is not reflected

Note :2                      The shortfall in the grant fund is made up from Internal generated Revenue

B	Grants from State Government			
	Balance brought forward	NIL	NIL	NIL
	Add : Receipts during the year	-	-	-
	Total (c)	-	-	-
	Less : Refunds	-	-	-
	Less : Utilised for Revenue Expenditure	-	-	-
	Less : Utilised for Capital expense	-	-	-
	Total (d)	-	-	-
	Unutilised Carried Forward (c-d)	-	-	-

**Statement of Clear Bank balances owned by NIT**

	Current Year 2021-22	2020-21 Previous Year
1 Total Cash & Bank balances -		
Schedule -7	280,255,681.01	166,005,075.32
Schedule - 6 Investment in ICICI MF	504,905.07	435,419.10
2 Total	280,760,586.08	166,440,494.42
3 Other legitimate Refundables and Payables		
State Cheque : Sch.3(6d)	4,471,357.00	4,487,873.00
Refundables/ Payables	65,124,214.74	63,885,607.74
CCB	2,853,007.00	2,081,057.00
Other Earmarked Fund (Projects)	17,957,808.09	10,110,647.99
Remittable Deductions	3,262,998.90	789,951.90
Total - 3	93,669,385.73	81,355,137.63
4 Clear Fund of NIT inclusive of IGR (2-3)	187,091,200.35	85,085,356.79
5 Of the above IGR Cumulative Fund Balance	329,014,459.42	306,093,780.41
6 MOBC Fund release from IGR	8,500,000.00	8,500,000.00
7 Total Cumulative Deficit under 31,36 and 35 [4-5-6]	-150,423,259.07	-229,508,423.62

**NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR**

**SCHEDULE - 4A:**

2021-22

Sl	ASSETS	G R O S S V A L U E			D E P R E C I A T I O N			N E T B L O C K				
		Opening Balance 1.4.2021	Additions	sale/ discard/ Transfer/ Adjst - ment	TOTAL 31.3.2022	Rate %	Opening balance	Depreciation for the year	Excess (short) Depreciation adjusted	Total Depreciation	31.3.2022	31.3.2021
4A	Tangible assets											
1	Freehold land	1,000.00	-	-	1,000.00	0%	-	-	-	-	1,000.00	1,000
2	Land Development	26,612.853	-	-	26,612.853	0	-	-	-	-	26,612.853	26,612.853
3	Buildings	75,369.304	3,000,000	-	78,369.304	2%	7,127.725	1,567.386	-	8,695.111	69,674.193	68,241.579
4	Playground	28,906.367	-	-	28,906.367	2%	1,156.254	578.127	-	1,734.381	27,171.986	27,750.113
5	Roads, drains & culverts	19,312.282	-	-	19,312.282	2%	1,771.057	386.246	-	2,157.303	17,154.979	17,541.225
6	Tubewell & Water Supply	4,307.519	-	-	4,307.519	2%	352.128	86.150	-	438.278	3,869.241	3,965.391
7	Electrical Equipment/ Installation	24,941.463	-	-	24,941.463	5%	7,490.362	1,247.073	-	8,737.435	16,204.028	17,451.101
8	Computers & Peripheral	104,150.478	2,382,703	-	106,533.181	20%	101,013.118	838.820	-	101,851.938	4,681.243	3,137.360
9	General Equipment	18,155.740	-	-	18,155.740	7.5%	11,895.818	1,361.681	-	13,257.499	4,898.241	6,259.922
10	Audio Visual Equipment	6,459.679	-	-	6,459.679	7.5%	2,528.276	484.476	-	3,012.752	3,446.927	3,931.403
11	Books	32,356.175	-	-	32,356.175	10%	22,665.161	3,820.783	-	26,485.944	5,870.231	9,691.014
12	Workshop/ Lab Equipment	702,142.174	-	-	702,142.174	8%	344,673.406	56,154.536	-	400,827.942	301,314.232	357,468.768
13	Sports Equipment	729.660	-	-	729.660	7.5%	548.934	54.725	-	603.659	126.001	180.726
14	Furniture & Fixture	108,149.530	-	-	108,149.530	7.5%	46,855.143	8,108.965	-	54,964.108	53,185.422	61,294.387
15	Vehicles	4,855.203	-	-	4,855.203	10%	3,666.767	241.724	-	3,908.491	946.712	1,188.436
16	Other Assets	2,901.854	-	-	2,901.854	7.5%	1,665.292	217.639	-	1,882.931	1,018.923	1,236.562
	Total 4A	1,159,351.281	5,382,703.00	-	1,164,733.984		553,409.441	75,148.331	-	628,557.772	536,176.212	605,941.840
4B	Intangible Assets											
10	Computer Soft ware	218,377.358	-	-	218,377.358	40%	213,567.559	-	-	213,567.559	4,809.799	4,809.799
11	E- Books & Journal	69,469.462	-	-	69,469.462	40%	67,732.725	-	-	67,732.725	1,736.737	1,736.737
	Total 4B	287,846.820	-	-	287,846.820		281,300.284	-	-	281,300.284	6,546.536	6,546.536
4C	Patent	181,220	-	-	181,220	11%	130,652	19,934	-	150,586	30,634	50,568
4D	Assets under 100% Depn	935,525	-	-	935,525	100%	935,525	-	-	935,525	-	-
	Total carried over	1,448,314.846	5,382,703	-	1,453,697.549		835,775.902	75,168.265	-	910,944.167	542,753.382	612,538.944



Total Carried forward	1,448,314,846	5,382,703	-	1,453,697,549		835,775,902	75,168,265	-	910,944,167	542,753,382	612,538,944
<b>4E Assets under Project</b>											
<b>(a) Tangible Assets</b>											
1 Computer	2,804,270	-		2,804,270	20%	1,989,686	390,160		2,379,846	424,424	814,584
2 Equipment	7,556,302	1,390,850		8,947,152	8%	1,745,047	715,772		2,460,819	6,486,333	5,811,255
<b>(b) Intangible Assets</b>											
1 Computer Software	3,593,373	-		3,593,373	40%	3,503,539			3,503,539	89,834	89,834
<b>Total 4E</b>	13,953,945	1,390,850	-	15,344,795		7,238,272	1,105,932	-	8,344,204	7,000,591	6,715,673
<b>4D TEQIP Assets</b>											
<b>(a) Tangible Assets</b>											
1 Equipment	46,216,586			46,216,586	8%	7,406,677	3,697,327		11,104,004	35,112,582	38,809,909
2 Computer	4,831,423			4,831,423	20%	1,905,538	966,285		2,871,823	1,959,600	2,925,865
<b>(b) Intangible Assets</b>											
1 e-Books	23,869,522			23,869,522	40%	18,201,265	3,528,000		21,729,265	2,140,237	5,688,237
2 Software	3,265,200			3,265,200	40%	2,537,558	449,400		2,986,958	278,242	727,642
<b>Total 4F</b>		-	-	78,182,731		30,061,058	8,641,012	-	38,692,070	39,490,661	48,131,673
<b>Total (4A to 4F)</b>	<b>1,462,268,791.13</b>	<b>6,773,553</b>	-	<b>1,547,225,075.13</b>		<b>873,065,232.00</b>	<b>84,915,209</b>	-	<b>957,980,441</b>	<b>589,244,634.13</b>	<b>667,386,290.13</b>
Total Tangible	1,221,695,387.13	6,773,553.00	-	1,228,468,940.13		567,391,914.00	80,917,875	-	648,309,789	580,155,151.13	654,303,473.13
Total Intangible	318,756,135.00	-	-	318,756,135.00		305,673,318.00	3,997,334	-	309,670,652	9,085,483.00	13,082,817.00
Previous Year	1,447,171,603.13	5,773,646	690,450	1,452,254,799.13		674,050,490	87,878,702	-	761,929,192	690,325,607.13	773,121,113

Residual value has been kept for Computer 2.5% E-books-2.5%, Software 2.2%, Project software -2.5%, Vehicle -5% of the gross value  
 Depreciation on TEQIP assets is cumulative since 2018-19

#### SCHEDULE 4 G : CAPITAL WORK IN PROGRESS

	Opening Balance	Addition during the year	Transfer during the year	Total 31.3.2022
1 Work Deposit with C.P.W.D. for Construction Works	835,000,000	-	-	835,000,000
2 Education Dept : Engg	900,981,412	-	-	900,981,412
3 MOBC	29,500,000	-	-	29,500,000
3 Architect / Consultancy Fee	2,272,185	-	-	2,272,185
<b>Total</b>	<b>1,767,753,597</b>	<b>-</b>	<b>-</b>	<b>1,767,753,597</b>



**NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR**

**SCHEDULE -5 : INVESTMENTS FROM EARMARKED / ENDOWMENT FUNDS**

		Year 2021-22	
Particulars		Current Year 2021-22	Previous year 2020-21
A	Long Term Investments		
1	In Central Government Securities	-	-
2	In State Government Securities	-	-
3	Other Approved Securities	-	-
4	Shares	-	-
5	Debenture & Bonds	-	-
6	Term Deposits with Banks	-	-
7	Others	-	-
Total		-	-

**SCHEDULE -5(A) : INVESTMENTS FROM EARMARKED / ENDOWMENT FUNDS (FUNDWISE)**

NIL

SCHEDULE 6 - INVESTMENT OTHERS		Current Year 2021-22	Previous year 2020-21
1	In Central Government Securities		-
2	In State Government Securities		-
3	Other Approved Securities		-
4	Shares		-
5	Debenture & Bonds		-
6	Others ( to be specified)		
	Mutual Fund - ICICI Prudential (9842.204 units)	504,905.07	435,419.10
	NAV as at 31.3.2022	504,905.07	435,419.10

NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR

Year 2021-22

SCHEDULE 7- CURRENT ASSETS	Current Year 2021-22	Previous year 2020-21
1 Stock :		
a) Stores and spares		-
b) Loose Tools		-
c) Publications		-
d) Laboratory Chemicals, Consumables & Glassswares		-
e) Building materials		-
f) Electrical Materials		-
g) Stationery		-
h) Water Supply materials		-
2 Sundry Debtors		
a) Debts Outstanding for a period exceeding six months		-
b) Others		-
3 Cash balances in hand(including cheques/ drafts and imprest) and remittance in transit	429,190.00	439,190.00
4 Bank Balances ( to be further classified as pertaining to earmarked fund or otherwise)		
a) With Scheduled Banks		
in Current Accounts	9,647,514.62	9,647,531.26
in Term Deposit Accounts		-
in Savings Accounts	270,178,976.39	155,918,354.06
b) With Non-Scheduled Banks		
in Current Accounts		-
in Term Deposit Accounts		-
in Savings Accounts		-
5 Post Office - Savings Accounts	-	-
	280,255,681.01	166,005,075.32

ANNEXURE : Details of Bank Accounts

NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR

**Annexure to Schedule 7 Details of Bank Balances**

2021-22

Sl No.	Name of Bank	Opening Balance 1.4.2021		Closing Balance 31.3.2022	
		Current Account	Savings Bank A/c	Current Account	Savings Bank A/c
1	ICICI Bank Ltd	7,748,134.18		7,748,134.18	
2	PNB	94,982.00		97,854.00	
3	SBI 6413		6,352,643.80		643,252.30
4	SBI	1,804,415.08		1,801,526.44	
5	Bank of India		522,807.00		538,646.00
6	Canara SB		777,428.10		800,986.10
7	Central Bank of Ind		552,811.00		552,811.00
8	Syndicate Bank		917,538.52		969,096.96
9	Syndicate Project		243,056.39		494,583.39
10	Yes Bank		600,015.63		600,515.63
11	BOB SB21096		88,884,217.30		63,650,945.14
12	BOB Project A/c		5,997,009.10		12,556,344.25
13	BOB DDO		1,880,905.00		166,767.30
14	BOB IRG		48,496,524.62		74,253,967.02
15	BOB 0319 (Mir Pjt)		53,397.60		51,872.70
16	BOB 8412		-		-
17	BOB -RD 1		160,000.00		230,000.00
18	BOB-RD 2		480,000.00		810,000.00
19	BOB-1062 PMFS				4,176,921.60
20	RBI (31)				98,707,376.00
21	RBI (36)				10,974,891.00
		9,647,531.26	155,918,354.06	9,647,514.62	270,178,976.39

NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR

Year 2021-22

SCHEDULE 8 - LOANS, ADVANCES & DEPOSITS	Current Year 2021-22	Previous year 2020-21
1 Advances to Employees		
a) Salary		-
b) Festival		-
c) Medical Advance		-
d) Others ( to be specified)		-
(i) LTC		-
2 Long Term Advances to Employees ( interest bearing)		
a) Vehicle Loan		-
b) Home Loan		-
c) Others ( to be specified)		-
3 Advances and other amounts recoverable in cash or in kind or for value to be received		
a) On Capital Account		-
b) to Suppliers	313,060.00	313,060.00
c) Others	5,100,093.00	5,752,522.00
4 Prepaid Expenses		
a) Insurance		-
b) Other Expenses		-
5 Deposits		
a) Telephone		-
b) Lease Rent		-
c) Electricity		-
d) AICTE (if applicable)		-
e) Others ( to be specified)		-
6 Income Accrued		
a) On investments from Earmarked / Endowment Funds		-
b) On Investments Others		-
c) Loans & Advances		-
d) Interest Accrued on Term Deposits	-	354,572.00
d) Others - Student Fees		-
includes income due unrealised		-
7 Other - Current Assets :		
a) Receivables from Sponsored Projects TEQIP	-	-10,296.00
b) Debit balances in sponsored Projects	670,541.00	385,797.00
c) Debit Balances in Fellowship & scholarship		
d) Grants Receivable		
e) Other Receivables & Recoverables	266,049.01	305,439.00
8 Claims receivable (TDS on Consultancy fee)	94,566.00	94,566.00
Total (1 to 8)	6,444,309.01	7,195,660.00

Receivable in IRG A/c from RBI A/c [36] 148265

contra - Schedule-3



NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR

Year 2021-22

SCHEDULE -9 : ACADEMIC RECEIPTS	Current Year 2021-22	Previous year 2020-21
<b>FEE FROM STUDENTS</b>		
<b>A Academic</b>		
1. Tuition Fee	14,830,082.00	16,694,529.00
2. Admission fee	305,000.00	305,000.00
3. Enrolment Fee	-	-
4. Library Admission Fee	-	-
5. Laboratory Fee	3,550.00	16,000.00
6. Institutional Development Fee	1,970,000.00	-
7. Registration Fee	-	-
8. Other Academic Fee	716,321.60	1,821,750.00
Total (A)	17,824,953.60	18,837,279.00
<b>B Examinations</b>		
1. Admission Test Fee	-	-
2. Annual Examination Fee	1,030,750.00	793,600.00
3. Mark Sheet, Certificate, Migration etc	262,118.00	-
4. Entrance Examination Fee	-	-
Total (B)	1,292,868.00	793,600.00
<b>C Other Fees</b>		
1. Identity Card Fee	61,000.00	65,700.00
2. Fine and Misc Fee	44,400.00	29,000.00
3. Medical & Insurance Fee	-	-
4. Transportation Fee	-	-
5. Hostel Admission Fee	-	-
6. Placement & Training	340,000.00	222,000.00
7. Student activity, Sports, Arts & Culture	308,000.00	344,000.00
Total (C)	753,400.00	660,700.00
<b>D Sale of University publication etc</b>		
1. Sale of Admission Forms	74,100.00	333,123.27
2. Sale of Syllabus & Question Paper	-	-
3. Sale of Prospectus	62,700.00	51,900.00
Total (D)	136,800.00	385,023.27
<b>E Other Academic Receipts</b>		
1. Skill Development Fee	3,000.00	11,000.00
2. Registration fee for workshops programmes etc.	-	-
Total (E)	3,000.00	11,000.00
<b>GRAND TOTAL (A+B+C+D+E)</b>	<b>20,011,021.60</b>	<b>20,687,602.27</b>

Note :

- 1 None of the fees received is in the nature of capital receipts and hence not capitalised
- 2 The academic year / period for which the fees are collected does not coincide to financial year. The income is recognised on actual basis and any fee received for the period covering beyond the financial year is not treated as advance fee received. In other way the outstanding fees i.e. due but not received are not recognised as



# **NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR**

**SCHEDULE -10 : GRANTS /SUBSIDIES (Irrevocable Grants & Subsidies Received)**

		<b>2021-22</b>					<b>2020-21</b>				
<b>A</b>	<b>Govt of India</b>	<b>Salary (36)</b>	<b>General (31)</b>	<b>Capital Exp (35)</b>	<b>TOTAL 2021-22</b>	<b>Salary (36)</b>	<b>General (31)</b>	<b>Capital Exp (35)</b>	<b>TOTAL 2020-21</b>		
1	Operating balance	2021-22	2021-22	2021-22		2020-21	2020-21	2020-21			
2	Grant Received	262,158,848.64	364,927,332.87	(856,594,605.13)	(229,508,423.62)	345,210,261.64	381,802,454.13	(856,594,605.13)	(129,581,889.36)		
3	Total	87,338,000.00	212,944,000.00	-	300,282,000.00	13,000,000.00	77,700,000.00	-	90,700,000.00		
4	Payments as shown below ##	349,496,848.64	577,871,332.87	(856,594,605.13)	70,773,576.38	358,210,261.64	459,502,454.13	(856,594,605.13)	(38,881,889.36)		
5	Balance of Fund	107,158,105.00	114,038,730.45	-	221,196,835.45	96,051,413.00	94,575,121.26	-	190,626,534.26		
		242,338,743.64	463,832,602.42	(856,594,605.13)	(150,423,259.07)	262,158,848.64	364,927,332.87	(856,594,605.13)	(229,508,423.62)		
<b># # Payments</b>											
a.	As per Income & Expenditure Account	107,153,605.00	112,563,782.44	-	219,717,387.44	95,660,199.00	101,011,610.26	-	196,671,809.26		
b.	Decrease(Increase) in Liabilities	4,500.00	2,228,299.00	-	2,230,799.00	391,214.00	(2,621,083.00)	-	(2,229,869.00)		
c.	Increase(Decrease) in Advances	-	(751,350.99)	-	(751,350.99)	-	(3,815,406.00)	-	(3,815,406.00)		
	Cash Payments (a+b+c)	107,158,105.00	114,038,730.45	-	221,196,835.45	96,051,413.00	94,575,121.26	-	190,626,534.26		

<b>B</b>	<b>State Govt and other Agencies :</b>										
	MOBC : For Construction of Hostel										
1	Operating balance	-	-	-	-	-	-	-	-		2019-20
2	Received during the year	-	-	-	-	-	-	-	-		8,500,000.00
3	Payments	-	-	-	-	-	-	-	-		-
4	Balance	-	-	-	-	-	-	-	-		8,500,000.00

Note 1 : No grant has been received from the MHRD under the head -35 : Capital Expenses from the year 2017-18. Thus the capital expenditure of Rs 53,82,703 has been during the year incurred from Internal Revenue Generated (IRG). Hence the expenditure is not reported.

Note 2 : The balance of fund is supported

<b>A</b>	<b>Cash and Bank balance i/c Mutual Fund Investment</b>	<b>2021-22</b>	<b>2020-21</b>		
<b>B</b>	<b>LESS :</b>				
1.	MOBC Fund included in above balance	8,500,000.00	8,500,000.00		
2.	IRG Fund	329,014,459.42	306,093,780.41		
3.	Refundable and Payables	65,124,214.74	63,885,607.74		
4.	Other Restricted Fund of Projects	17,957,808.09	10,110,647.99		
5.	CCB Fund	2,853,007.00	2,081,057.00		
6.	Remittable Deductions	3,262,998.90	789,951.90		
7.	Slale Cheque Account	4,471,357.00	4,487,873.00		
	<b>Total B</b>	<b>431,183,845.15</b>	<b>385,948,918.04</b>		
	<b>Balance of Fund of Grant (A-B)</b>	<b>-150,423,259.07</b>	<b>-229,508,423.62</b>		

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<b>SCHEDULE -11 : INCOME FROM INVESTMENTS</b>	<b>Current Year 2021-22</b>	<b>Previous year 2020-21</b>
1 Interest		
a) On Govt securities		
b) Other Bonds/ Debenture		
c) Others : Mutual Funds	69,485.97	65,253.81
d) Mutual Fund Investments		
Less : transfer to designated fund accounts		
2 Interest on Term deposits	-	435,369.00
3 Income accrued but not due on Term Deposits/ Interest bearing		-
4 advances to employees ( where Revolving Fund has been constituted)		-
5 Others (Specify)		-
	69,485.97	500,622.81
<b>SCHEDULE 12 : INTEREST EARNED</b>		
1 On Savings bank Accounts with Schedule Banks	4,234,004.44	5,206,451.00
2 On Loans		
a) Employees ( if Revolving Funds have not been constituted for such advance)		
b) Others		
3 On Debtors and Other Receivables		
Total	4,234,004.44	5,206,451.00

Note

<b>SCHEDULE -13 : OTHER INCOME</b>		
A Income from Land & Buildings		
1. Hostel Room Rent	69,500.00	97,500.00
2. License and Permit Fee		-
3. Hire Charge of Auditorium/Play ground/ Convention Centre etc		-
4. Electricity & Water Charges recovered	13,000.00	39,000.00
5. Quarter Rent	1,480,073.00	1,493,943.00
6. TEQIP 3		-
7. Non- IRG :Student Medical & Insurance fee	350,800.00	343,600.00
6. Guest House Earning		-
Total	1,913,373.00	1,974,043.00
B Sale of Institute's Publication (included under schedule 9-D)	-	-
C Income from holding events		
1. Gross Receipts from annual functions/ sports carnival		
Less : Direct expenditure incurred on the annual function/ sports carnival		
2. Gross Receipts from fetes		
Less : Direct expenditure incurred on the fetes		
3. Gross Receipts on Educational Tours		
Less : Direct expenditure incurred on the Educational Tours		
4. Others (to be specified and separately disclosed)		
Total		



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D Others	Current Year 2021-22	Previous year 2020-21
1. Income from Consultancy	1,159,414.00	238,154.00
2. RTI fees		-
3. Income from Royalty		-
4. Sale of Application Form ( recruitment)		-
5. Misc receipts XRD Sample Charge, (sales of waste paper)		1,200.00
6. Profit on sale/ disposal of Assets		
a) Owned Assets		-
b) Assets acquired out of grants or received free of cost		-
7. Grants/ Donations from Institutions, Welfare Bodies & International Organisations		
8 Others (Specify)		
a) Sale of Tender Form	14,000.00	7,000.00
b) Other Receipts		226,242.51
c) Overhead from Projects ( Net 1335711 - 256891	1,078,820.00	480,075.00
d) Staff Recruiting	-	-
c) Donation/ Sponsor	-	533,349.00
Total	2,252,234.00	1,486,020.51
<b>GRAND TOTAL (A +B+C+D)</b>	<b>4,165,607.00</b>	<b>3,460,063.51</b>

**SCHEDULE 14- PRIOR PERIOD INCOME**

Disclosed seperately under Schedule 24 Note -9

	Current Year 2021-22	Previous year 2020-21
1 Academic Receipts		
2 Income form Investments	-	-
3 Interest Earned	-	-
4 Other Income	-	-
Total	-	-

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Actuarial Valuation on the retirement benefits has not been obtained and the capitalised value has not been calculated



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<b>SCHEDULE -16 : ACADEMIC EXPENSES</b>	<b>Current Year 2021-22</b>	<b>Previous year 2020-21</b>
1 Laboratory Expenses	178,648.00	258,510.00
2 Field Work / conference/ Faculty Development/ Training	99,004.00	93,898.00
3 Expenses on Seminar,workshop & short term course		137,983.00
4 Payments to Visiting Faculty	-	-
5 Examination	-	-
6 Student Insurance & Medical	1,372.00	-
7 Professional Dev Expenses	-	1,756,765.00
8 Convocation Expenses	159,350.00	767,721.00
9 Academic Support	284,131.00	477,788.00
10 Stipend/ Means cum-merit Scholarship, Ph.D Stipend	29,213,613.00	21,888,783.00
11 Subscription, Periodical Expenses	7,678.00	58,611.00
12 Others ( Specify)	-	-
a) Placement, Career Dev. Exp	-	89,678.00
b) Sports & Other Activities	256,389.00	569,514.00
c) M. Tech Scholarship	2,672,792.00	3,322,373.00
d) Hostel Exp	14,490.00	36,130.00
e) Festival & Celebrations	1,841,399.00	484,997.00
f) Others : Trainee Teacher Scheme	96,876.00	109,355.00
	<b>34,825,742.00</b>	<b>30,052,106.00</b>
<b>SCHEDULE -17 : ADMINISTRATIVE AND GENERAL EXPENSES</b>		
<b>A Infrastructure</b>		
1 Electricity and Power	3,865,179.00	2,671,749.00
2 Water Charges	898,915.00	762,055.00
3 Insurance		
4 Rates,Service & Other Taxes (including Late fine)	-	-
	<b>4,764,094.00</b>	<b>3,433,804.00</b>
<b>B Communication</b>		
1 Postage & Telegrame	82.00	-
2 Telephone, Fax & Internet Charges	52,268.00	72,342.00
	<b>52,350.00</b>	<b>72,342.00</b>
<b>C Others</b>		
1 Contract Staff Salary	36,466,730.00	35,274,962.00
Leave & Pension Contribution	855,484.00	
E.P.F. Employers Contribution	1,837,470.00	
E.P.F. Administration Charges	152,550.00	
Relocation & Moving Allowance	99,750.00	
2 Printing & Stationery	683,165.00	1,408,202.00
3 Traveling & Conveyance	355,232.00	1,184,702.00
4 Honorarium	692,983.00	-
5 Auditor's Remuneration (CAG)	-	-
6 Internal Audit +GST	118,000.00	118,000.00
7 Professional Charges	660,000.00	660,000.00
8 Advertisement & Publicity	138,980.00	118,798.00
9 Megazine & Journal	-	-
10 Others ( Specify)		
a) Guest House Exp	-	350,000.00
b) Staff Recruiting Expenses	-	83,340.00
c) Meeting Expenses	38,749.00	300,383.00
d) Security and House Keeping Exp	21,201,782.00	18,313,250.00
e) Consultancy & Outsource	148,671.00	-
f) Contingency 206805+307677+6305	293,714.00	520,787.00
g) Functions & Celebration	726,013.00	125,737.00
Total	<b>64,469,273.00</b>	<b>58,458,161.00</b>
<b>Total A+B+C</b>	<b>69,285,717.00</b>	<b>61,964,307.00</b>



<b>SCHEDULE-18 : TRANSPORTATION EXPENSES</b>	<b>Current Year 2021-22</b>	<b>Previous year 2020 21</b>
1 Own Vehicles		
a) Running Expenses	210,465.00	328,667.00
b) Repairs & Maintenance	-	-
c) Insurance	-	-
2 Vehicle taken on rent/ lease	-	-
a) Rent/ lease expenses	846,710.00	476,217.00
3 Vehicle (taxi) hiring Expenses	-	-
	1,057,175.00	804,884.00
<b>SCHEDULE-19 : REPAIRS AND MAINTENANCE</b>		
1 Buildings	565,706.00	315,328.00
2 Furniture & Fixture	-	-
3 Plant & Machinery	107,560.00	124,816.00
4 Office Equipments	-	-
5 Computer Maintenance & Accessories	534,239.00	204,818.00
6 Laboratory & Scientific Equipment	-	2,973,600.00
7 Roads & Bridges	92,296.00	46,500.00
8 Cleaning materials & services		62,715.00
9 System Maintenance	5,499,917.00	3,547,339.00
10 Campus Maintenance	3,000.00	5,000.00
11 Estate Maintenance	-	-
12 Others Assets	-	-
13 House-Keeping materials	72,765.00	
Total	6,875,483.00	7,280,116.00
<b>SCHEDULE -20 : FINANCE COST</b>		
1 Bank Charges	35,935.44	60,485.26
2 Others (Specify)		
	35,935.44	60,485.26
<b>SCHEDULE -21 : OTHER EXPENSES</b>		
1 Provision for Bad & Doubtful Debts/ Advances		
2 Irrecoverable Balances written off		
3 Grants / Subsidies to Other Institutes/ organisations		
4 Others (specify)		
a) Donation to PM Care fund	-	533,749.00
b) Insurance for students (Non IRG)	-	-
c) Share of Consultancy Fee	483,730.00	315,695.00
Total	483,730.00	849,444.00
<b>SCHEDULE - 22 :PRIOR PERIOD EXPENSES</b>		
1 Student scholarship	-	-
Others	-	-
Misc Debit balances w/o	-	268.00
Total	-	268.00

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SCHEDULE -23 :PRIOR PERIOD ITEMS/ ADJUSTMENTS (Credit)	Current Year 2021-22	Previous year 2020-21
Faculty Development, Training, Field work - cheque issued but	-	2,000,000.00
Medical Reimbursement	-	395,714.00
Children Education Allowance Dr	-	-30.00
Seminar & Conference	-	20,000.00
Training & Conference payable	-	1,129,900.00
Payable Travel Exp	-	244,766.00
Others - Misc Credit balances in Sundry Creditors written back	-	7,045.00
	-	3,797,395.00

## SCHEDULE 24 : SIGNIFICANT ACCOUNTING POLICIES

## 1. Accounting Convention

- a) The accounts are maintained and financial statements are prepared on the basis of historical cost convention.
- b) Recognition of revenue and related assets and liabilities  
The Institute normally follows the cash basis of accounting. However, for presentation of financial statements the liabilities and assets which are ascertained are taken into account.
- c) Retirement Benefits  
The liability for expenses on retirement benefit of the staff – gratuity, leave salary estimated on the basis of number of years service and number of days of unavailed leave at the year end is provided and accounted on accrual basis and charged to expenses except as disclosed in the Notes on Account.
- d) Retirement Pension for the staff other than those covered under NPS is to be accounted on accrual basis.
- e) Interest on Special Term Deposits with Bank compounded up to end of the year is accounted on accrual basis.
- f) Fees received from the students are accounted on actual receipt basis. Thus the fees received covering the period beyond the financial year is treated as Income in the year of receipt. However fees short paid by the students at the time of admission is treated as receivable fees.
- g) The value of the work bills which have been passed for payment but not paid is recognised as expenses and the related liability thereof is provided.
- h) Works in progress physically measured / unmeasured but not billed is not taken into the statement of account as the realistic value cannot be estimated.
- i) Deposits for the execution of the works made with the executing agencies are treated as work in progress to form part of fixed assets which shall be reversed to works value on the completion of the work.
- j) Security deposit received from the students  
The security deposit is treated as current liabilities. Any non-refunded security deposit lying after expiry of three years from the due date of refund is considered as unclaimed liability and accordingly treated as Income of the Institute
- k) Income received for other purpose  
Any receipt not relating to normal activity of the Institution obtained from any source which has to be spent for the specific purpose is not treated Income of the Institution but accounted as Current Liability. Accordingly, the expenditure incurred out of such receipts is not treated as normal expenditure of the Institute. The difference between the receipt and expenditure is directly taken in the balance sheet as balance of fund.

## 2. Apportionment of grant into revenue and capital grant


- a) The grants are treated either revenue receipt or capital receipt according to the direction of the granting authority. The capital grants are directly credited to General (Capital) Fund and the revenue grants are credited to Income and Expenditure Account. However, if such apportionment has not been made by the granting authority the whole amount of grant received is credited to Income and expenditure Account. In case the grant is received in accordance with the proposal initiated by the Institute the amount to the extent of capital expenditure component is treated as capital grant and treated accordingly.

  
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- b) In respect of grants and contribution received under earmarked fund for special purposes or research works by the Departments the whole amount of grant is credited to the fund account and the expenses both revenue and capital are charged to the Fund. However, the value of the assets created out of the grant is treated as the fixed assets by giving corresponding credit to Capital Fund account as these assets acquired out of the grant form part of the assets of the Institute
- c) Other grants which are received other than specific purpose of creating capital assets are directly treated as revenue receipts and capital grants are directly credited to Capital Fund Account
- 3. Internal Revenue Generated (IRG)**  
The academic fees received from the students and other income earned by the Institution is treated as revenue receipt and credited to Income and Expenditure Account. Any expenditure of capital nature incurred out of IGR is treated as Assets forming part of fixed assets.
- 4. Treatment of expenditure renovation of, addition & alteration and extension on existing buildings not owned by the Institute.**  
A portion of facilities of the Institute is accommodated on the land and buildings owned by the Govt of Manipur with a right to use as a temporary campus. However, to meet its requirements expenses are incurred by way of renovation, partitions, addition & alterations on the existing buildings which result in some cases creation of new immovable asset. However, these assets, being immovable, have to be left behind when the institution shifts to its new campus. Therefore, the expenditure has been treated as revenue expenditure
- 5. Valuation of Inventory of consumables**  
The consumable items which are normally purchased for instant use and not intended to carry a substantial quantity thereof regularly are charged in full to the expenditure of the year. However, in case of purchases in bulk for consumption for a significant duration and stock of significant quantity is regularly carried in hand, the balance lying in stock is recognised as inventory under current asset. In such a case the valuation is made at cost or realisable value whichever is less.
- 6. Fixed assets**
- Fixed Assets are stated at cost of acquisition inclusive of all direct expenses related to acquisition. In respect of projects involving construction related pre-operative expenses are absorbed into the cost of the assets
  - Assets received by way of Non- monetary grants are accounted with corresponding credit to the Corpus (Capital) Fund Account at the value declared by the donor.
  - The value of the assets created out of the grants under Earmarked Fund/ Restricted Fund (sponsored project) is capitalized with corresponding credit of Corpus (Capital) fund Account.
  - Where the funding agency reserves, in terms of sanction order of the grant, the right to ownership/ control over the assts like equipment, furniture, books etc. created out of the grant given for research activities the expenses are not taken into in Fixed Assets Group of the Financial Statement. Such assets will be taken into the fixed asset only after grant of the permission of ownership by the funding agency. In such a case the value of the assets is to taken after notional depreciation worked out at the rate applicable to the class of the asset. The assets acquired out of the grant but not capitalized are disclosed separately in the Notes on Account
  - Where the funding agency has not reserved any right to ownership/ control over the assets created in due course of the research activity, the value of such assets is capitalized and taken in the relevant group of assets in the financial statement

  
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- f) Assets received as gifts are valued at price indicated by the donor and where such price is not indicated the value is assessed on the prevailing market price

**7. Fixed Assets and Depreciation**

- a) Fixed assets are stated at cost of acquisition/construction less accumulated depreciation. The cost of assets comprises its purchase price and directly attributable cost of bringing the assets to working condition for its intended use i.e. cost of acquisition of assets including inter-alia interest on borrowing and incidental expenditure during construction incurred up to the date of commissioning.
- b) Assets received by way of Non-monetary grants are accounted at the value declared by the donor with corresponding credit to the Capital Fund Account.
- c) Depreciation on the assets is charged at the rate prescribed in the format of accounts issued by Ministry of Human Resource Development. Depreciation for full year is provided on the assets purchased during the year.
- d) A reasonable residual value is kept for assets which is fully depreciated
- e) No depreciation is charged on the assets till the asset is ready for use.
- f) No Depreciation is charged in the year of sale or disposal

**f) Change in the Method of Depreciation**

Depreciation on fixed assets is provided on written down value method upto 31.3.2014. However from FY 2014-15 onwards, in compliance with the direction of the Ministry of Human Resource Development, the method of depreciation has been changed to Straight Line Method. The excess/ shortfall arising from the change in the method (taking retrospective effect) has been charged to Income and Expenditure Account.

**8 Capital Work In Progress**

Capital work in progress includes cost of construction expenditure, deposits and advances made for such construction, interest on funds deployed on capital work in progress and other indirect preoperative expenditure incidental and related to acquisition of assets.

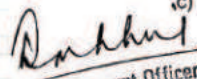
**9 Restricted Funds [ Special Purpose Funds]**

- a) Any income by way of grant, donation, contribution, bank interest and income earned from investment is credited directly to the Fund and any outgoing towards revenue or capital expenses is charged to the fund. The net balance is treated as balance of the fund at the end of the year.
- b) Such fund is independently and distinctly shown under a separate head in the balance sheet
- c) The non-recurring expenses are treated in the fund account as expended and the value of the assets is taken in the general account under the group head of Fixed Assets with corresponding credit to Corpus/ Capital Fund.

**10 Staff Retirement Benefits**

The present retirement benefits are gratuity, leave encashment and pension. The benefits are worked out on the assumption:

- a) The members of the staff shall continue in the services of the Institution to be eligible for retirement benefits.
- b) With the number of years service earned the staff retires on the last date of the accounting year.
- c) The provision so made is to be reversed on the actual payments

  
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**11 Loans & Advances for expenses**

- a) The payments in the nature of advance for meeting expenses are booked under the head " Advances". These advances are charged to expenses only when the activity for which the advance is drawn is accomplished and the related documents have been approved and passed by the competent authority
- b) The loans and advances as shown in the statement of account are considered good and recoverable by way of expenses or otherwise and as such no provision for loss is made in the accounts

**12 Foreign Exchange Transaction**


The transactions involving foreign exchange directly entered into by the Institute or foreign exchange earned is disclosed separately under Notes on Account.

**13 Capital Commitment**

The ascertained capital commitment in respect of capital works contracts but not completed is disclosed separately under Notes on Account

**14 Contingent Liability**

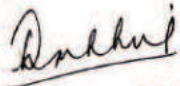
It is disclosed separately under Notes on Account

  
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**SCHEDULE -25 : Contingent Liabilities and Notes on Account**

1. There is contingent liability for about of Rs 3.00 lakh arising from claims made by a consultant firm
2. The financial statements are presented on the format prescribed by Ministry of Human Resource Development, Govt. of India.
3. The Government of Manipur has allotted 341 acres of land at Langol in favour of the Institute free of cost. The value of land has been recognised in financial statement at a nominal amount of Rs 1000.00
4. **Loans & Advances**  
The loans and advances as shown in the statement of account are considered good and recoverable by way of expenses or otherwise and as such no provision for loss is made in the accounts
5. The residual value of the assets after expiry of usable life in respect Computer & Peripheral, e- books, Intangible assets are taken at 2.5% of the original cost and vehicles at 5%.
6. **Other receipts/grants**  
The institute received grants for conducting research activities the project-wise funds received and expenditure incurred are reflected in Schedule 3(a). The unspent balance (Rs 179,57,808.09) is shown under Current Liability (Schedule 3) and the debit balance in the fund (670,541.00) under current assets in the Balance Sheet (Schedule 8).
7. At the year-end there was no significant stock of inventory of lab. consumables and hence in accordance with para 5 of the Significant Accounting Policies the value of the inventory is not considered as current asset.
8. **Stale Cheque Account – under current liability Rs 41,71,357.00 ( Prev. year 44,87,873.00)**  
The amount pertains to 42 cheques issued on or before 31.3.2020 whose validity has already expired. The cheque includes two cheques amounting to Rs 27,49,921.00 pertaining to NPS contribution on arrear salary. The cheques could not be encashed as the portal for NPS could not be accessed. On the claim of revalidation or fresh cheque the reversal entry shall be passed.
9. **Deposit works with CPWD, Education Department, Govt of Manipur**  
The amount has been treated as Capital Work in Process under the head 'Fixed Assets'. Value of the work completed has to be finalised with the executing agencies.
12. **Retirement benefits**
  - a) The provision for gratuity was made by applying a formula of 15 days salary for every year of service completed – over six months period rounding up to 1 year. Provision was made upto the year 2017-18
  - b) Provision for leave encashment is worked out on the basis of unavailed leave remaining outstanding at the end of the year 2017-18. The provision after that year has not been made.
  - c) Payment for leave, pension contribution and gratuity of the staff has been made according to claims raised by the respective parent department in respect of staff on deputation and thus provision has not been made for the year towards pension and leave contribution.
  - d) The staff on regular appointment has joined the NPS and the contributions of the Institute along with the subscription of the staff are remitted regularly
  - e) For the contract staff the Institute has participated the scheme of Employees Provident Fund under The Employees Provident Fund and Miscellaneous Provisions Act, 1952 and both the employees subscriptions and Institute's contributions are remitted regularly

  
Account Officer,  
National Institute of Technology Manipur  
Autonomous Inst. under MoE, Govt of India





- f) No plan assets are funded or maintained to meet future leave encashment/ gratuity obligations. As the Institution has not engaged the services of Actuarial Valuer provision for gratuity and leave encashment has not been made after 2017-18.

13. Inter account:

The inter- account balance arises from deduction of quarter rent from salary under Account (36) – Salary but outstanding for remittance as on 31.3.2022.

Account -36 (Salary) :	Liability payable to IRG	Rs 148,265 - Sch. 3
Account IRG -	Receivable form RBI a/c [36]	Rs 148,265 - Sch. 6

The accounts being in the nature of contra item not reflected in financial statement. However disclosure has been made under respective Schedules.

14. Equipment purchased under project accounts and capitalisation

In the following project accounts the equipments were purchased during the year. The granting agencies have not stipulated / reserved the right of ownership on the assets and therefore the value of assets has been capitalised and taken in the Schedule 4E in terms of significant accounting policy – Para 6 –“Fixed assets”

Dr Lenin Inspire 1st Project	Rs 31,251
Dr Tamphasana SERB	Rs 11 00,000
DR Chandi 2 <sup>nd</sup> Project	Rs 1,84,999
Dr Lenin New Project	Rs 74,600
Total	Rs 13,90,850

14 Foreign Exchange Transaction

There is no foreign exchange transaction during the year

- 15 The facility of General Provident Fund contribution is not applicable to the employees of the Institute except one member of staff. The statement of affairs of General Provident Fund account of the staff is separately presented.

15. The quantitative information as on 31.3.2022 is furnished as under

a)	Number of students including Ph D	1090
b)	Number of students passed out	223
c)	Number of scholars completed Ph.D.	13
d)	Number of Faculty	73 [ Regular 39 + Contract 34]
e)	Number of Non- Faculty	73 [ Regular 10 + Contract 63]
f)	Number of hostel	3 [ Boys -2, Girls -1]

Date  
Imphal

  
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**NATIONAL INSTITUTE OF TECHNOLOGY, MANIPUR**

**2021-22**

**STAFF PROVIDENT FUND ACCOUNT**

**RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31.3.2022**

RECEIPTS	Amount (Rs)	PAYMENTS	Amount (Rs)
Contribution to General Provident Fund	79,008.00		-
Interest on Bank Account	4,815.00		-
	<u>83,823.00</u>		
Opening bank balance : BOB 60330100001062	1,46,561.00	Closing bank balance BOB 60330100001062	2,30,384.00
	<u>2,30,384.00</u>		<u>2,30,384.00</u>

**INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31.3.2022**

EXPENDITURE	Amount (Rs)	INCOME	Amount (Rs)
Excess of Income over expenditure - being	4,815.00	Interest on bank account	4,815.00
Interest credited to Fund Account	<u>4,815.00</u>		<u>4,815.00</u>

**BALANCE SHEET AS AT 31.3.2022**

FUND & LIABILITIES	Amount (Rs)	ASSETS	Amount (Rs)
Provident Fund Account :			
Opening balance	1,46,561.00	Cash at bank BOB 60330100001062	2,30,384.00
Addition during the year by contribution	79,008.00	Receivable from NIT for deduction	
Add : contribution for month of March, 2022	6,648.00	of March 2022	6,648.00
Add : excess of income over expenditure	<u>4,815.00</u>		
	<u>2,37,032.00</u>		<u>2,37,032.00</u>

*Account Officer,*

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