1.   The Institute

The North Eastern Regional Institute of Science and Technology (NERIST) was set up by the Government of India, initially as a project of the North Eastern Council, for providing a system of education to create technical manpower at various levels for the development of the North Eastern Region of the country. The foundation stone of the Institute was laid by late Giani Zail Singh, the then President of India, on 4th March, 1984 and the first batch of students was admitted to the Base Module in August, 1986 and subsequently to Diploma and Degree Module. So far by July, 2008, seventeen batches of graduates in Engineering with specialization in Agricultural Engineering, Civil Engineering, Computer Science & Engineering, Electronics & Communication Engineering, Electrical Engineering, Mechanical Engineering and in Forestry have completed their degrees.

The Institute introduced M. Tech. (Full Time), M.Tech. (By Research/ part time), M.B.A and Ph.D. (Part-time) Programmes from the Academic Session 2006-07. Its Academic Council has already recommended Ph.D. (Full Time) Programme from the Academic Session i.e. from 2009-2010 along with this, the Council has also recommended some new courses in Diploma and Degree Module and also in M.Tech. Programmes, and this has been approved by the Board of Management and these are likely to accord approval by the AICTE and UGC. The Institute attained the status of Deemed University under section 3 of the UGC Act, 1956, vide Notification No. F.9-15/2005-U.3, dated 31st May, 2005 by Ministry of Human Resource Development, Govt. of India. This year, the Institute completed its 25 years service to the whole North East States as well as to the nation and celebrated Silver Jubilee on 4th March, 2009. The first convocation of the Institute was held on 1st April, 2009 and Her Excellency, Smt. Pratibha Devisingh Patil , the President of India delivered her convocation address as Chief Guest.

2.   LOCATION

The Institute is located in a picturesque valley at the foothills of the Eastern Himalayas and is situated at Nirjuli in the Papum Pare district of Arunachal Pradesh, on the National Highway 52A. It is about 19 km from Itanagar, the capital complex of Arunachal Pradesh. Arunachal Pradesh is the land of exotic orchids and lush green hills. It provides an ideal setting for higher and technical education with a backdrop of quiet and pristine surroundings.

Located at a distance of about 400 km from Guwahati, the Institute can be accessed by rail, road or air. Super Deluxe buses to and from Guwahati are available daily. Taxies can also be hired at Guwahati for coming to the Institute. An overnight train connects Harmuty (the nearest railway station in Assam and

is 15 km ahead of NERIST) to Rangiya. Pawan Hans provides a helicopter service 3 days a week (Monday, Wednesday, and Friday) from Guwahati to Naharlagun (7 km from the Institute). Air services are also available from Lilabari Airport (about 47 kms. away from the Institute and 7 km away from North Lakhimpur, Assam).

3. Objectives:

The objectives of the Institute are:

❖ to provide for instruction and training in such branches of learning as it may deem fit;

❖ to provide for research and for the advancement of and dissemination of knowledge;

❖ to undertake extra mural studies, extension programmes and field outreach activities to contribute to the development of the society;

❖ to provide suitable and efficient institutional facilities of training of technical and scientific manpower in different disciplines with particular reference to the special needs of the north eastern states to help them in proper exploitation of the natural potential for economic development;

❖ to promote all such other things as may be necessary or desirable to further the objects of the Institute

The programmes of the Institute have been designed to meet the needs of the country in terms of scientific, technological and managerial expertise and also to keep pace with the new and emerging areas of research.

4. M.Tech (Part time), Ph.D. (Part Time) and Ph.D. (Full time) Programme

4.1. Admission Requirement

(a) M.Tech (Part time)

(i) B.Tech. or equivalent with a CGPA 3.25 on a 5.00 point scale or 60% marks aggregate for General Category. 5% marks relaxation is to be given to SC/ST/PH category.

(ii) Candidate(s) must submit No Objection Certificate from employer, if working. Organization should be located within 50 km of NERIST preferably. No GATE score required.

(iii) The admission to the M.Tech.(Part Time) Programme will be based on the basis of their performance in the written test and/or interview conducted by the Department concerned.

(b) Ph.D. (Part time) and (Full Time)

Candidates having Master's Degree in Engineering/Technology with 60% marks in aggregate or CGPA 3.25 on 5.00 point scale and in Science/Humanities, 55% marks in aggregate for general category. 5% marks relaxation is to be given to SC/ST/PH category. The admission to the Ph.D. Programme will be based on the basis of their performance in the written test and/or interview conducted by the Department concerned. No objection Certificate is required from employer for working candidate. No GATE/NET is score required.

For Sponsored Ph.D. (Part Time) & Full Time): Same as above. Sponsoring Certificate from employer is required stating that period of study will be treated as on duty with usual salary/allowances and he/she will be relieved for the period of studies and all fees will be paid by the organization (sponsor).

5. Reservation

Seats will be reserved for the candidates of SC, ST, OBC and PH Category as per Central Govt. Rules.

6. Ragging

As per Supreme Court's verdict- "Ragging is a disorderly conduct, whether by words spoken or written, or by an act which has the effect of teasing, treating or handling with rudeness any student, indulging in rowdy or undisciplined activities which cause or are likely to cause annoyance, hardship or psychological harm or to raise fear or apprehension thereof in a fresher or a junior student and which has the effect of causing or generating a sense of shame or embarrassment so as to adversely affect the psyche of a fresher or a junior student." Ragging is banned in NERIST and any one indulging in ragging during the entire period of his/her study in NERIST is likely to be punished appropriately which may include expulsion from the Institute, suspension from the Institute or classes for a limited period or fine with a public apology.

7. Sponsored Candidates (for Ph.D. (FT) Programme only)

Sponsored candidates are also eligible to apply for this Programme. Sponsoring Certificate from the employer is required stating that period of study will be treated as on duty with usual salary/allowances and he/she will be relieved during the period of studies and all fees will be paid by the organization (sponsor).

8. Despatch of Application forms

The filled in application form, complete in all respects, along with the attested copies of following certificates and mark sheets should be posted to Deputy Registrar/Assistant Registrar (Academic), NERIST, Nirjuli, Arunachal Pradesh – 791109, as per notification as published.

a) Certificates of H.S.L.C. or equivalent examinations (for proof of age).
b) Mark sheets of all examinations including that of qualifying examinations.
c) Certificate of qualifying degree examinations.
d) SC/ST/OBC/PH Certificate, if applicable.
e) No objection Certificate from the employer, if the candidate is employed.

9. Selection Procedure

a) The result of sort-listed candidates will be displayed on Institute's Notice Board and the same may be available at Institute Website. Admit Cards to the short listed candidates will be sent by post and no separate letter will be sent for the Written test/or interview. Incomplete applications will be rejected and no communication will be made in this regard. Selection will be made on the basis of merit. Result of selected candidates will be displayed on Institute Notice Board and Website as per notification published.

b) The Institute will not bear any responsibility for any postal delay in delivering the Admit Cards to the candidates for the written examination and/or interview. No TA/DA would be provided for attending written examination and/or interview.

c) Any telephonic query in this regard may be made at the following numbers of NERIST EPBX: (0360) 2257401 to 11 Extn: 6008/6312/6466; Fax No. (0360) 2258533/2257872.

10. Admission

a) Admission to all the programmes of M.Tech (PT), Ph.D.(PT and FT) of the Institute is open to all Indian Nationals. NRI Foreign students are also allowed for the admission provided they fulfill eligibility criteria and clearance from Govt. of India.

b) The candidates selected for admission will be required to report to the Academic Section of the Institute on the specified date for admission.

c) Candidates must produce all the certificates and mark sheets of all examinations in original for verification at the time of admission. Admission will be allowed subject to production of medical fitness certificate and verification of all certificates and mark sheets. If the result of the qualifying examinations of the selected candidate is not declared before admission he/she may be allowed to provisional admission provided that the candidate submits examination completion certificate from the Principal/Head of the Institution and admit card of the said examination. A candidate has to give an undertaking in the prescribed format for submission of the requisite documents(s) by a specified date, failing which his/her registration will be cancelled.

11. Areas of Research

Areas of research available in the different departments are given under departmental details.

12. Assistantship/Fellowship

An M.Tech. (Part time) and Ph.D. (Part Time) & (Full time) student irrespective of the source of research Assistantship while pursuing course work must attend at least 75% of classes in each course in which he/she is registered. In case his/her attendance falls below 75% in any course during a month, he/she will not be paid Fellowship/Assistantship if any, for that month. Further, if his/her attendance again falls short of 75% in any course in any subsequent month in that semester, his/her studentship and Fellowship/Assistantship if any, will be terminated. A Research Scholar after having completed the course work must attend to his/her research work on all the working days and mark attendance except when he/she is onduty/sanctioned leave. The requirement of 75% attendance will apply as above, on daily attendance except in the cases where longer leave has been duly sanctioned within the leave entitlement of the student.

13. Concession:

All SC/ST candidates and NERIST faculty/staff members admitted to the M.Tech. (Part time) and Ph.D. (Part time) or (Full time) programmes are entitled to have 50% exemption of tuition fees.

14. Leave:

M.Tech (Part time) : An M.Tech. (Part time) student during his/her stay at the Institute will be entitled to leave for 30 days (including leave on medical grounds), per academic year. He/she will not be entitled to mid-semester breaks, summer and winter vacations. He/she, however, may be permitted to avail of leave only up to 15 days during winter vacation at the end of the first semester.
The leave will be subject to approval of the Head of Department/Centre/Programme Coordinator concerned and a proper leave account of each student shall be maintained by the Department/Center concerned. An M.Tech. student may be allowed to avail a maximum of 9 days extra leave without Fellowship/Assistantship during his entire stay at the Institute.

Ph.D. (Part time) & (Full Time) : **During the Course work** : A full-time Ph.D. student, during his/her stay at the Institute will be entitled to leave for 30 days, including leave on medical grounds, per academic year. He/she will not be entitled to mid semester breaks, summer and winter vacations. He/she, however, may be permitted to avail of leave only up to 15 days during winter vacation at end of the 1st semester. Leave beyond 30 days in an academic year may be granted to a research scholar in exceptional cases subject to following conditions:

a) The leave beyond 30 days will be without Fellowship/Assistantship/Scholarship,

b) Such an extension of up to additional 30 days will be granted only once during the Programme of the scholar.

c) The leave may be subject to the approval of Head of the Department/Centre concerned on the recommendation of the supervisor; and a proper leave account of each scholar shall be maintained by the Department/Centre concerned.

d) Other rules and regulations will be governed by UGC/AICTE norms from time to time.

e) **After Completing the Course Work:** A Ph.D student during his/her stay at the Institute will be entitled to leave for 30 days, per academic year. He/she will not be entitled to mid-semester breaks, summer and winter vacations. In addition, a Ph.D. scholar who has completed his/her course work may be granted leave on medical grounds up to 10 days per academic year. The woman research scholars will be eligible for Maternity Leave with Fellowship/Assistantship for a period not exceeding 135 days once during the tenure of their award. During stay of candidate of Ph.D. (Full Time), Scholars may be assigned to teaching and other works for the interest of the Institute.

15. Fees & Deposits Payable:

All candidates selected for admission under any of the categories shall be required to pay at the time of joining the tuition and other fees (not-refundable) and refundable Caution Money deposits, as stated below:

(i)   M.Tech. (Part time)

Sl. No	Name of Item	1st Semester		2nd Semester onwards	
		GEN/ OBC	SC/ST/ NERISTIANS	GEN/ OBC	SC/ST/ NERIST Employee
1	Semester Fee	3000	1500	3000	1500
2	Registration fee	300	300	-	-
3	Examination fee	300	300	300	300
4	Provisional Certificate fee	100	100	-	-
5	Thesis fee	1500	1500	-	-
6	Students Welfare fund	200	200	-	-
7	Grade Card Fee	150	150	-	-
8	Alumni Fee	500	500	-	-
	Total	**6050**	**4550**	**3300**	**1800**

N.B. : (i) The fee for Identity Cards is Rs. 50/- charged extra, if issued.

(ii) If any student wishes to avail the facilities of Institute's Central Library, then he/she has to deposit an amount of Rs. 3000/- as Caution Money (Refundable) in Finance Branch.

(ii) Ph.D. (Part Time)

Sl. No	Name of Item	1st Semester		2nd Semester onwards (for all category	
		GEN/ OBC	SC/ST/ NERISTIANS	GEN/ OBC	SC/ST/ NERISTIANS
1	Semester Fee	3000	1500	3000	1500
2	Admission fee	150	150	-	-
3	Registration fee	300	300	-	-
4	Examination fee	600	600	-	-
5	Grade Card fee	150	150	-	-
6	Provisional Certificate fee	100	100	--	--
7	Thesis fee	3000	3000	--	--
8	Students Welfare fund	200	200	--	--
9	Alumni fee	500	500	--	--
	Total	**8000**	**6500**	**3000**	**1500**

N.B. : (i) The fee for Identity Cards is Rs. 50/- charged extra, if issued.

(ii) If any student wishes to avail the facilities of Institute's Central Library, then he/she has to deposit an amount of Rs. 3000/- as Caution Money (Refundable) in Finance Branch.

(iii) Ph.D. (Full Time)

Sl. No	Particulars	1st Semester (Admission)		2nd semester onwards	
		GEN/ OBC	SC/ST NERISTIANS	GEN/ OBC	SC/ST NERISTIANS
1	Admission Fee	150	150		
2	Tuition Fee	3000	1500	3000	1500
3	Examination fee	600	600	-	-
4	Registration Fee	300	300	-	-
5	Extra Curricular Activities	220	220	220	220
6	Medical Fee	50	50	50	50
7	Internet & Comp. facility	500	500	500	500
8	Hostel Seat Rent	600	600	600	600
9	Elect. Water Fee	300	300	300	300
10	Thesis Fee	3000	3000		
11	Grade Card Fee	150	150	-	-
12	Provisional Certificate Fee	100	100		
13	Students Welfare Fund	200	200		
14	Identity Card Fee	50	50		
15	Alumni Fee	500	500		
16	Institute Caution Money	1000	1000		
17	Library Caution Money	4000	4000		
18	Late fee				
	Total	**14720**	**13220**	**4670**	**3170**

Note :

(1) Late fee for Rs. 200/- on first week and Rs. 500/- on 2nd week

(2) Fee structure of the M.Tech. (PT), Ph.D.(FT and PT) are subject to the   Approval of the Competent Authority.

16. Assessment and award of grades

The Institute has 5.00 point absolute grading system. For every course taken by the student, grades are awarded by the Course Coordinator based on his/her performances in the tests/quizzes, assignments and examinations as per the grading system given below:

% of marks Ranges	Letter Grade	Grade Point	Description
≥ 75	A	5	Excellent
60-74	B	4	Very Good
45-59	C	3	Good
30-44	D	2	Fair
<30	F	0	Fail

The performance of the student will be evaluated in terms of two indices: GPA (Grade Point Average) and CGPA (Cumulative Grade Point Average) for the Course, works.
The GPA/CGPA will be computed as under:

GPA/CGPA = [$\sum$ (Course Credit x Grade Point)] / [$\sum$(Course Credit)]

If the GPA/CGPA of a student falls below 2.00 at the end of first or subsequent semesters his/her admission shall be automatically cancelled. If the CGPA of a student falls below 3.00, his/her Scholarship or Assistantship etc. shall be suspended.

17. Fellowship

There is a provision of limited fellowship for the Ph.D. (Full Time) Scholars. The fellowship will be of Rs.5000/- p.m. and a contingency grant of Rs.8000/- for Humanities and Social Sciences and Rs.10,000/- for Science and Technology discipline per annum.

18. Hostel facility

There are separate hostels for boys and girls in the campus of the Institute with all facilities. There are seven boys and one girls' hostel in the campus. Ph.D. (FT) Scholars (bachelor only) are eligible to get the hostel facility subject to the vacancy of seats. Those who wish to stay outside the hostel must apply for permission to hostel authority.

19. Campus Amenities

The Institute in its campus has a Health Unit, a Sub Post Office (with Speed Post facility), a branch of State Bank of India with ATM facility, ATM facility of AXIX Bank, a Co-operative store, NERIST employees Thrift & Credit Co-operative Society, Co-operative mini-supper market, Co-operative medical store, a Kendriya Vidyalaya (up to Class XII) and Kindergarten School for Children. There are also clubs for ladies, staff and faculty in the Campus. There are Canteens for students and staff. The Institute houses a BSNL telephone exchange in the campus and has its own EPABX of over 1000 lines.

20. Residential Requirement

Married M. Tech. and Ph.D. scholar is expected to get a transit accommodation in the Institute to carry out their research work till the work is over and the thesis can be submitted, subject to availability of quarters.

Bachelor male scholars will be provided individual room accommodation in the Post Graduate Boys Hostel; while female scholars will be provided in the Girls Hostel, subject to availability of seats.

21. Semester Registration

Every scholar either working in the Institute or externally in an Industry after taking withdrawal or otherwise must do the semester registration in July and January of every year as notified in Academic Calendar and pay the prescribed semester fees.

22. Advanced Central Computing Facility (ACCF)

ACCF was set up in 1996 with an objective to promote research and encourage advanced computer based studies. Today ACCF plays a key role in the field of computer education not only at the Institute but outside the campus too. Apart from students, faculty members and staff of NERIST, government and private establishments outside NERIST make use of this facility. ACCF laboratory is effectively used by all students of the Institute for their computer based projects.

23. Educational Technology Cell

Educational Technology Cell (ET Cell) was set up as an MHRD project with an objective to improve the teaching and learning process. Further, the cell provides facility to prepare educational resources in the form of study material, video lectures to cater the needs of the students & employees. The cell has two Seminar

Halls equipped with modern facilities like Audio Video Equipments, Digital Camera, LCD projector etc. A studio is under development, which currently takes up the indoor/outdoor recording of the Institute functions.

24. Internet & e-mail Section

This section looks after the Local Area Network (LAN) of the Institute, comprising of 800 nodes spreading various departments and sections. Institute LAN is based on Gigabit Ethernet. The Institute is well connected to INTERNET through a permanent Leased Line from BSNL. The Institute is also planning to get 2 MBPS connectivity through V-SAT from ERNET, India. The section provides Internet and e-mail services to all the members. Faculty members and students make use of this facility to carryout their academic & research activities. Institute has its own domain nerist.ac.in and its web page is hosted by its own server from this section. This provides gateway to international academic world.

25. Institute Library

The Central Library of the Institute has collection of over 60,000 books and 193 periodicals. It subscribes about 49 international & 144 national journals including informative popular magazines. In addition to the above, it subscribes to 12 National and Regional dailies to provide a base for enhanced learning. CAPS (Contents, Abstracts & Photocopy service of INSDOC), CML (Current Mathematical literature), CCEL (Current Civil Engineering Literature) are also available in the library.

NERIST is also the institutional member of Indian Liquid Crystal Society, Bangalore & Kaziranga wild Life Society of Assam to provide literature and information services. The NERIST is the core member of INDEST CONSORTIUM provided by MHRD, Govt. of India through which the Institute is getting online electronic Journals. The Library has procured a full set of standards (BIS Codes) as used by faculty and students; and houses a large number of CD's being used as teaching aids. The library has large members of computers with accessories. The library has developed a database for books through CDS/ISIS 3.07 Version and has proposed for library automation in near future. The library is also having Internet & E-mail connectivity. The library has also book bank facilities.

26. Written Test and/or Interview

All candidates seeking admission to M. Tech (Part Time)) and Ph.D. (Part Time and Full Time)) will be required to appear before a Board for Written Test

and/or interview to be conducted by the respective departments. The Board will assess the academic attainment and research experience, if any, of the candidates.

27. Certificates and Documents

The following certificates in original and one attested true copy of each of them are to be submitted at the time of written test and/ or interview, viz., Mark sheet, Certificate etc. of all public examination passed, evidence of research experience, if any, be also furnished. Detailed information with regard to the Departments/Centers and areas of research available in them are given below:

28. Departments

The Institute has 11 Academic Departments and two Centers, viz.,

Departments

(1)   Agricultural Engineering
(2)   Civil Engineering
(3)   Computer Science & Engineering
(4)   Electrical Engineering
(5)   Electronics & Communication Engineering
(6)   Mechanical Engineering
(7)   Forestry
(8)   Physics
(9)   Chemistry
(10)   Mathematics and
(11)   Humanities & Social Sciences

Centers

(1)   Centre for Appropriate Technology and Rural Development
(2)   Centre for Management Studies

The departments of Agricultural Engineering, Civil Engineering, Computer Science & Engineering (does not offer Certificate Courses), Electrical Engineering, Electronics & Communication Engineering, Mechanical Engineering run Certificates, Diplomas and Degrees in Engineering Courses. The following Departments and Centers run PG-courses.

Agricultural Engineering
Civil Engineering
Computer Science & Engineering

Electrical Engineering
Electronics & Communication Engineering
Mechanical Engineering
Forestry
Chemistry
Physics
Mathematics
Humanities and Social Sciences / Centre for Management Studies

Department of Agricultural Engineering

Introduction and Brief profile of the Department:

Agricultural Engineering deals with the use of engineering tools and practices to solve crop production, handling and processing problems for food and fiber along with the production to consumption chain. It includes the application of scientific knowledge in diverse and multi-disciplinary activities for the overall development of the nation and farming community under protective environment.

The Agricultural Engineering Department came in to existence since inception of the Institute. The department also follows a two years modular pattern of education as adopted by the Institute viz. Base module, Diploma module and Degree module.

Agricultural Engineering is an interdisciplinary programme, comprising of specialization like Soil and Water conservation Engineering, Irrigation & Drainage Engineering, Farm Machinery Engineering, Farm Power Engineering, Dairy and Food Engineering, Post Harvest Technology, and Non Conventional Energy Sources besides some interdisciplinary courses. The primary aim of this branch is to provide technical knowledge to increase agricultural production and productivity through better management of land and water resources, appropriate use of more efficient agricultural machinery, better techniques of post harvest technology and improved methods of processing and preservation of foods. Courses offered are accordingly designed, keeping in view of the AICTE and ICAR norms. In addition, there are number of related courses from sister disciplines. These enable students to specialize in their areas of interest.

Laboratory facilities exist for conducting practical classes in all professional subjects. All the laboratories are equipped with state-of-the-art equipments like tilting flume channel ,water analyzer and pressure plate apparatus etc. cut section of tractor, tractors of different make, fluidized bed dryer, tray dryer, spectrophotometer, milk analyzer, freeze dryer, etc.

UG Students of this discipline get an exposure to industrial training of 50 days during pre-final year. Further they get an opportunity to do research through project work. The student projects offered are normally related to real problems of the region as well as of industry and also of other emerging areas. This helps student to develop their self confidence to present technical matters and to become entrepreneurs. Students passing out from the department are employed in Government, Semi – Government Organization, NGO, Tea Estates, Banks, Irrigation Equipment Companies, Tractor and Farm Machinery Industry, Food Processing Industry and Teaching and Research Organizations.

Vision of the Department

1) To cater the engineering needs of sustainable food production in the north-eastern region under safe and protective environment.
2) To develop technical manpower in the areas of food processing and value addition for the region.
3) To develop mechanized farming practices with due consideration to energy reduction, safety and comfort.
4) To develop technology for the conservation and management of natural resources of the region.

List of Faculty members of the department with Degree and area(s) of interest:

Name	Designation	Areas of Interest
L. S. Yadav, Ph. D.	Professor	Farm power & Equipment, Energy in Agriculture, Tea Processing, Effective utilisation of tractors and other equipment on tea gardens, Finance & Marketing related problems of tractor customers
P. P. Dabral. Ph. D.	Professor	Irrigation water management, Watershed management, Stochastic hydrology and Optimization techniques
S. K. Shrivastava, M. Tech.	Lecturer (SG) and **Head**	Stochastic Hydrology, Climatic Change and Watershed Management
D. K. Syamal, M. Tech.	Lecturer (SG)	Food Processing, Energy for food processing
K. N. Dewangan, Ph.D.	Assistant Professor	Ergonomics, Farm Machinery and Power
M. K. Hazarika, M. Tech. **(On lien)**	Lecturer (Sr. Scale)	Drying of Foods, Modelling and Simulation of Food Engineering Operation
B. Srivastava, Ph.D. **(On lien)**	Lecturer (Sr. Scale)	Process and Food Engineering, Fruits and Vegetables Processing
D. Jhajaria, M. Tech. **(On QIP)**	Lecturer (Sr. Scale)	Water Resources Engineering

Prasanna Kr. G. V.,M. Tech. **(On QIP)**	Lecturer (Sr. Scale)	Design of Farm Machinery
P. K. Pranav, M. Tech.	Lecturer	Soil Dynamics and Traction, Renewable sources of energy
P. Anand Kumar, Ph.D.	Lecturer	Non destructive quality evolution of foods
Aditi Bhadra, Ph.D.	Lecturer	Hydrological modelling, Remote Sensing &GIS
P. K. Pandey, M. Tech.	Lecturer	Hydrological Modelling, Micro irrigation, Water management
T. Patel, M. Tech.	Lecturer	Farm Machinery, Ergonomics and Bio-diesel
M. Ukil Singh, M. Tech.	Lecturer	Farm Implement/Equipment Design

Facilities in the Department:

Departmental Library: The departmental has a full-fledged departmental library that takes care of the requirement of students, faculty and staff members. Presently library has good number of books covering various areas of specializations of Agricultural Engineering, Manuals, Diploma and Degree project reports, Training reports, Magazines, New releases and other books and journals donated by the faculty members.

Computational facility: Department has a well-maintained computational facility which is connected to broad band INTERNET through LAN. It provides Internet and e-mail services to all the members of the department to carryout their academic & research activities. Computer Laboratory is having the latest models of computers like Pentium-IV (8 Nos.), Pentium-III (13 Nos.), Workstation along with DeskJet and LaserJet printers. The students get exposure to various types of Application and design software's such as C, C++, Visual Basic, Mechanical Desktop, AutoCAD, MATLAB, SPSS, Curve expert etc. The facility fulfills the computational and research needs of students and faculty members.

Seminar room: The seminar room of the department is well equipped with Over head projector, LCD projector and projector screen besides computer and white board. The faculty and students utilized this facility to exchange their ideas through presentation and discussion. The diploma, degree and M.Tech presentations are conducted here. The department is in the process of acquiring audio system to make the presentations more effective.

Research Projects:

Project Title	Project Duration	Amount Received	Funding Agency	Status (Completed/ in progress)	No. of faculty involved
Generation of anthropometric data of the agricultural workers of north eastern region for the safe and efficient design of farm machinery	14.2.99 to 13.2.03	16 lakh	ICAR , New Delhi	Completed	01
Study on basic hydraulics and moisture movement of drip emitters	July, 03 to Sep, 04	0.5 lakhs	NERIST	Completed	01
Design and Economics and Utilization of Water Harvesting tank- A case study	16.4.02 to 17-4-05	4.4 lakhs	GBPIHED, Almora	Completed	02
Erosion hazard assessment using remote sensing and GIS techniques in a hilly catchments- a case study	1.04.04 to 31.3.07	08 lakhs	MHRD, New Delhi	Completed	01
Land slide zonation of Dikrong river basin using RS and GIS	May,03 to Oct, 06	10 lakhs	MHRD, New Delhi	Completed	01
Documentation and improvement of traditional fermented food technologies of Arunachal Pradesh and to inventories their microbial diversity	Dec, 04 to Dec, 07	Rs 5.85 lakhs	DBT, New Delhi	Completed	01
The Rural Development Centre	1.4.04 to 31.3.06	40 lakhs	KVIC, Mumbai	In progress	02
All India Co-ordinated Research Project on Ergonomics and Safety in Agriculture (AIRP on HESA)	1.11.04 to 31.3.07	52 lakhs	ICAR, New Delhi	In progress	01
Identification of mechanization gaps and popularization of improved agri-horticultural implements for the rural development of Arunachal Pradesh	1.4.05 to 31.3.08	10 lakhs	DST, New Delhi	Completed	01
Livelihood improvement and empowerment of rural poor through sustainable farming system in north –east India (NAIP)	Dec 07 to Nov, 12		ICAR	In Progress	01

Achievements of students:

Two students each got campus placement in M/s Infosys, SRIJAN India, One student got placement in ICICI Bank and one student qualified for CEED (Combined Entrance Examination for Design) and joined M.Des. at IIT Guwahati.

Any other relevant information:
The Academic Council of NERIST in its 6th meeting held on January 09, 2009 has approved the proposal for starting of M.Tech. in Soil & Water Conservation Engineering; and Dairy and Food Process Engineering.

Department of Civil Engineering

The Department of Civil Engineering is recognized as one of the major engineering departments in the North Eastern region of the country. The main objectives of the Department are to develop high quality technical manpower at Certificate, Diploma, Degree and Post Graduate levels and to cater to the needs of the North Eastern Region in particular and the nation in general. The Department has capability of imparting quality education to the students through well-qualified faculty and staff.

The Department of Civil Engineering follows, at the UG level, a modular pattern of education adopted by the Institute. There are three modules, namely, Base, Diploma and Degree Modules. The Department now proposes to offer PG and research programmes. It also plans to expand its sphere of activities through new centers.

Name of the Faculty with designation, qualification and area of Specialization:

Name	Designation	Area of Specialization
S. K. Singh, Ph. D.	Professor	Geotechnical Engineering
S. Baishya, Ph. D.	Asstt. Professor	Geotechnical Earthquake Engg. & Structural Engineering
S. S. Mishra, Ph. D. **(On lien)**	Asstt. Professor	Transportation Engineering
P. Nagarjuna, M. Tech. **(On lien)**	Lecturer (Sr. Scale)	Hydraulics & Water Res. Engineering
S. K. Sahu, M. Tech.	Lecturer (SG)	Soil Mech. & Foundation Engineering
H. P. Singh, M.E **(On QIP)**	Lecturer (SG)	Building Structure
S. Mishra, Ph.D.	Asstt. Professor	Water Resources Engineering
R. K. Prasad, Ph.D.	Asstt. Professor	Transportation Engg. & Renewable Energy
Y. Bidyalaxmi Devi, M.Tech.	Lecturer	Environmental Engineering
Ajoy Bharati, M. Tech.	Lecturer	Environmental Engineering
Dipika Devi, M. Tech.	Lecturer	Geotechnical Engineering

K. Kiran Singh, B. Tech.	Lecturer	
Mudo Puming, B. Tech.	Lecturer	

Facilities available

The Department at present has the following laboratories with major equipments listed against each:

Computer Lab: 15 nos of Pentium D processor based machines, 20 nos of Pentium-III based machines with Printers, Scanner and 6 KLVA UPS system with LAN Networking and Internet Connectivity.

Drawing and Drafting Section: Xerox machine, Edge Binding machine, Drafting machine, Ammonia Printing machine, Tracing Table, N.C. scriber CS 110, Lerroy Printing Set, Over head Projector, etc.

Engineering Geology Lab: Various Rock and mineral samples, tools and small equipments, Projector, etc.

Environmental Engineering Lab: BOD incubator, UV-Vis Spectrophotometer, Visible Spectrophotometer, Digital PH meter, Autoclaves, Electrical conductivity meter, Exhaust gas analyzer, Water analysis Kit, Photoelectric calorimeter, Nephlo turbidity meter, Kjeldahl digestion apparatus, Bacteriological incubator, Muffle furnace, Chlorine comparator, Refrigerator, COD Reflux Condenser, Magnetic stirrer, Horizontal and vertical Rotary shaker, Hot Air Oven, Floc Test Apparatus.

Field Engineering Lab: Various plumbing and sanitary tools; pipes, wrench, vice, cutting and threading tools, water supply and sanitary fittings, low and high level flushing cisterns, traps and water closets and tolls for masonry works**.**

Geotechnical Engineering Lab: Triaxial Testing Machine for standard and large diameter samples, Consolidation Apparatus, Direct shear test, SPT equipment, Permeater, Proctor, and IS moulds and Rammer Ovens, Index Properties Testing Apparatus, Augers and Samplers, Hydraulic jacks.

Highway Engineering Lab: Impact testing machine, Deval Attrition Testing machine, Los Angles' Abrasion Testing machine, Marshall Test Apparatus, Ductility Testing Apparatus, Film stripping Device, Bitumen Extractor, Standard Penetrometer, Ring and Ball apparatus, Flash and Fire point apparatus.

Material Testing Lab: Compression Testing Machine, Flexure Testing Machine, Flow Table, Slump Test Apparatus, Vibrating Table, Needle vibrator,

Compaction Factor Apparatus, Vee-Bee Consistometer, Vicat Apparatus, Standard Cone Penetration apparatus, Tile Flexure Testing machine, Sieve shaker, Non-destructive testing equipments.

Structures Lab: Reaction of Beam apparatus, Bending Moment apparatus, Shearing force apparatus, Deflection of Beams apparatus, Three hinged arches, Two hinged parabolic arch, load fixing moments, Maxwell Bette's theorem apparatus, Muller Breslau's End Moment apparatus, Tension coefficient apparatus, Critical load on struts, eccentrically loaded struts, Elastic Beam Apparatus.

Surveying Lab: One second theodolite, Twenty second Transient, Dumpy Levels, IOP levels, Engineer's precision level, Quick setting Dump level, Plane table with Telescopic Alidade, Chains, Staves, Planimeter.

Water Resources Engineering Lab: Gravimetric Hydraulic Bench, Centre of Pressure Apparatus, Venturi meter, Orifice meter, Flow over Notches (Triangular notch, Rectangular notch), Pipe Friction Apparatus, Stability of a Floating Body Apparatus, Reynolds Number and Transitional Flow apparatus, 5 m Open Channel with accessories like Venturi Flume, Parshall Flume, Sluice Gate, Sharp-Crested weir, Spillways, Radial Sector Gate, Jet Impact apparatus, Air flow Bench with accessories like Bernoulli's apparatus, Centrifugal Pump Test apparatus (Pelton Wheel turbine, Francis Turbine), Losses in Piping system, Vortex Apparatus. Hydrology apparatus, Permeability Tank, Universal Axial Flow Machine, Universal Radial Flow Machine.

Achievements

The department has hosted two national centres, namely STA of PMGSY and FNDM of Ministry of Home in resent past. The Department has three sponsored research projects under MODROB and TAT of Min. of Human Resource Development, Govt. of India.

Department of Computer Science & Engineering

The Computer Science and Engineering Department came into existence in 1986. It offers a unique combination of courses and projects that helps its students to cope with the recent advancements in the Computer Industry and Information Technology. It offers regular courses like Computer Organization, Data Structures, Application Software, Operating Systems, Discrete Mathematics, Digital Electronics, Microprocessors, Database Management Systems, Compiler Design, Data Communications, Computer Networks, Design and Analysis of

Algorithms to name a few of them. Apart from the regular courses a few of the important courses offered are Artificial Intelligence, VLSI Design, Image processing, Fault Tolerant Computing, Information Theory, Distributed Processing, etc.

Name of the Faculty with designation, qualification and area of Specialization:

Name	Designation	Area of Specialization
T. Tuithung, Ph.D.	Lecturer (SG) & **Head**	Image Processing
S. Borah, M.Tech.	Lecturer (Sr. Scale)	Image Processing
M. Kathing, B.Tech.	Lecturer	Computer Science & Engineering
K. Legoh, M.Tech**.**	Lecturer (Sr Scale)	Speech Processing

N. Marchang, M.Tech.	Lecturer (Sr. Scale)	Database Management System
Aswani Kr. Patra, B. Tech.	Lecturer	
M.M. Singh, B.Tech.	Lecturer	
Manjul Saikia, B.E.	Lecturer	

Facilities available

The Department at present has the following laboratories with major equipments listed against each. The Department has well equipped laboratories with state-of-the art machines.

PC Lab: The students get exposure to various types of Application Software such as Visual Basic, Dbase, LOTUS, Visual C++, etc in this lab. Basic Computer training for the students of all the Departments of NERIST is also given here. It is well equipped with Pentium III PC's (866MHz, 64MB RAM, 20GB HDD, CD ROM drive), Celeron PCs (300 Mhz, 32 MB RAM, 4.1 GB HDD), AMD-6 PCs (32 MB RAM, 4.1 GB HDD), Digital Cameras along with Printers.

System Lab: The Systems Laboratory is equipped with servers and terminals basically for working in UNIX/LINUX environment. However, one can also work in Windows platform. Hands on exposure to various programming Software such as C, C++, FORTRAN etc and RDBMS software like Oracle 10G with developer suit and SQL Server, Visual Studio.NET are available in this lab. This lab has a SUN ULTRA SPARC 10 S SERVER, HCL Infinity Global Line Servers, IBM INTELLISTATION SERVER, HP Thin clients, HP Compaq PIV and Pentium III PC's along with Printers. AS/A4 Multipen Plotter 4100, Scanners etc. The lab is well equipped with LAN trainer kits Benchmark LAN-T consisting of LAN-NEU, LANT-NIU, LANT-SW, LANT PS. It also has Benchmark ISECURIT a network and data security training system. Microcontroller Student Learning Kit, Code Warrior Developer Studio – HC08 Academic Edition, 8 bit HC08 Student learning kit, Platform Creation Suite for LINUX Embedded RTOS-NL, Code Warrior Developer Studio-HCS12(X) Academic Edition, 16 bit HCS12 Student Learning Kit and ARM Processor Based 1 MXL ADS with LCD. All the

machines are on the institute LAN and thus have Internet access. The students are encouraged to do network related projects in this lab.

Microprocessor & Digital Lab: Training in various types of Microprocessors and Computer hardware is imparted in Microprocessor laboratory. This laboratory is complete with different types of Microprocessor and Micro-controller Kits and hardware related equipment. It also has the facility for training in Digital Electronics, which is the heart of every Computer. The lab is well equipped with Frequency counters, Oscilloscopes, Analog Multi-meters, Power supplies, PC Trainer kits, Digital IC trainers, Electronic Multi-meters, Functional Generators, Audio Generators, Pulse Generators, Microprocessor Trainer Kit IMPACT, Microprocessor Trainer Kit Star 85, Microprocessor Kit 68 K, Microprocessor Trainer Kit 6802, Microprocessor Trainer Kit DYNA86, Micro-controller Kit DYNA 51, STD Based Card for Computers, Servo Controlled Voltage Stabilizers, Isolation Transformer, Bread Boards, Bush Monitors for 85 kit, Colour TVs etc.

Hardware Lab: The Hardware lab is set up in the Computer Science and Engineering Department for subjects like Peripherals, Assembling of Computer, Fault tolerance and different hardware related topics. To carry on these classes the lab is well equipped with Pentium PCs (100 Mhz, 16 MB RAM, 2.1 GB HDD), different 386 machines like a set of PC ORG SYSTEM XT, PC ORBIT XT, PCL PC AT 386, WIPRO GENIUS 386, ESPL SUPERCHIP XT, ESPL SUPERCHIP AT, PCL-HALLMARK-II and various types of monitor like GeBBS COLOUR MONITOR, DOSL/50 MONO MONITOR, HCL GR-86 VDU, WEBEL MONITOR, one color TV, TVSE, L&T and INKJET printers, 1KV UPS and Tool kits like ISA Post Card (Hardware Diagnostic Card), Advanced Hardware Debugger Card, PC Trainer Cum Demonstrators etc..

Other facilities

The final year projects are offered taking into consideration the rapid advancements in the Computer Industry and Information Technology. The students of the department carry out projects in fields like Computer Networks, Neural Networks, JAVA implementation, CORBA, COM-DCOM, Cluster Computing in PVM Platform, E Commerce, Web-site Development, Parallel and Distributed Processing, Agents, etc.

R & D Cell: This Cell has been developed to carry out researches that are funded by external agencies, through student projects and for faculty research. Three projects, one in Thrust Area and two in R & D scheme are presently being carried out in this cell. The cell is equipped a HP Proliant ML150 Server and a HP Laserjet 3015 multifunction device, Pentium IV PC (2.5 GHz. 256 DDDR SDRAM, 40 GB HDD, 17" Color monitor), a Pentium IV PC (1.5 GHz, 256 SD RAM, 20 GB

HDD, 17" Color Monitor), a Pentium III PC (800Mhz, 20.4 Gb HDD, 256 SD RAM). It also has a HP – Color Laser jet (4550N Networking printer), Multipurpose Office Jet (G55, Scanner cum copier cum printer).

Seminar Hall: The Department has a full-fledged seminar hall, which can seat about 40 people. Faculty members and the students of the department use the seminar hall for exchange of ideas and information through presentations and discussions. Final year project seminars are conducted here. Also the presentations for Seminar course are given here. This facility is freely made available to faculty, students and research assistants and staff in the department would he or she like to give a seminar presentation on a topic of his/her choice. This hall is equipped with a Pentium III (866 MHz, 64MB RAM) PC, an LCD projector and other related accessories like a white board, a projector screen, etc. The department is in the process of acquiring a Hi-Fi Sound system to make it more complete.

Departmental Library: The Department has its own library, caters to the need of the students and teachers alike. Books and materials related to the courses run by the department and other research areas are made available in the library. The department is in the process of setting up a full-fledged departmental library that will cater to the needs of students, faculty and staff of the department. Presently, the library has, in its store, some core Computer Science books, magazines, Manuals of different hardware, software etc., Announcement of new release, Training reports, Degree Project Reports, Diploma Project Reports etc. This library has books on subjects like Artificial Intelligence, Computer Architecture, Neural Network, Fortran 77, Database, C Programming, Operating Systems, Computer Organization, Data Structure, Algorithms etc. Manuals of the software etc. are available in the library for easy access. Some manuals available viz : ONIX, PASCAL, Autocad, COBOL, F 77, User's Guide on Basic etc.

Sponsored Research Projects: The faculty members of the department are involved in various inter-disciplinary research projects funded by agencies like CSIR, MHRD, NEC, DoE etc. The interactions of the faculty members with other Govt. and non- Govt. institutions have helped in increasing the employment prospects of passed-out graduates in organizations like, Infosys, C-Dot, SIEMENS, Tata Telecom, British Mahindra Telecom, DRDO, NICNET, ISRO, OIL, CSIR, Telecom, CMC, PCL, HCL, IDPL, IOC, SAIL. TELCO, TISCO, ESCORTS, Mindtree, State Departments of Electronics, Power & PHED. In past department has completed major Research Projects and some continuing.

Department of Electrical Engineering

The Department of Electrical Engineering came into existence right from the inception of the Institute. The first batch of the graduates passed out in 1992.

The courses offered by the Department following the modular pattern are structured in such a way so as:

- to train the base module students the art of servicing and maintenance.

- to impart enough supervisory and guiding skills to the diploma module students.

- to provide sound knowledge to the degree module students to make them able to analyze, design and capable to lead with innovative ideas in the field of Electrical Engineering suitable for the current need of modern industries, research organizations and public sectors.

The Department has already started the M.Tech. (by Research) and Ph.D (Part Time) Programmes.

Name of the Faculty with designation, qualification and area of Specialization:

Name	Designation	Area of Specialization
K. Kumar,Ph.D.**(On Leave)**	Professor	Power System Reliability, SCADA
P. D. Kashyap, M.E	Asstt. Professor	Measurement & Instrumentation
O. P. Roy, Ph.D.	Asstt. Prof. & **Head**	Electronics & Instrumentation Engineering
S. K. Bhagat, Ph.D.	Asstt. Prof	Control Systems
R. K. Mehta, M.Tech.	Lecturer (SG)	Control Systems
S. Gao, M.Tech**. (On QIP)**	Lecturer (SG)	Energy Systems
S. Chatterjee, M.E	Asstt. Prof	High Voltage Engineering & Power System
Radak Blange, B.Tech.	Lecturer (Sr. Scale)	
T. V. P. Singh, M.E.	Lecturer (Sr. Scale)	Control & Instrumentation
A. K. Singh, Ph.D.	Lecturer (Sr. Scale)	Power System and Electrical Machine Drives
M. Deben Singh, M.Tech	Lecturer	Electronic Design Technology
A. Parida, M.E	Lecturer	Industrial System & Drives
Gauri Shankar, M.Tech.	Lecturer	Energy Studies
Anu Kumar Das, M.Tech.	Lecturer	

Facilities available

At present department has following laboratories and one Information Security Centre, which are well equipped. These are:

Power System and Protection Lab: Distribution line simulator, PC controlled Power Analyzer, Oil test set, Different types of Electromagnetic and Static Relays, Dielectric Purification Plant, Analog Oscilloscope, Digital Storage Oscilloscope (2-channel), 3-phase Variable Inductor, 1-phase & 3-phase Loading Rheostats, Digital Clamp on Power meters, LCR-Q meter, 3-phase Capacitor Bank. Capacitance and Tan Delta Test Set.

Digital Electronics & Microprocessor Lab: Microprocessor Training Kits as Dyna 8085 (10 Nos., STAR 85 (04 Nos.), VPL 8086/8088 , Micro controller training Kit as VMC – ICE31/51 and 80C196KC, Advance Handy Serial Programmer, Universal Programmer, Universal and Analog IC tester, Data Acquisition Software, Study Cards as Memory Decoders, Usart , Programmer Timer, DMA ,PPI with timer and Latch Cards, PC based Analog and Digital motor control teaching set , Robotics, Thermocouple, Load Cell, LDVT and DC motor speed control, 485 Protocol based Distributed Control System

Electrical Maintenance Lab: Domestic Refrigerator, Air conditioners, Geysers, Heat Convectors, Table & Ceiling Fans, Vacuum Cleaner, UPS set, Water Cooler, Hot Plate, Immersion Heater, Different types of lamps with fittings, Oscilloscopes, Working Models for Electrical Circuits of Automobiles(in order) etc.

Electrical Workshop: Mini Lathe Machine, Winding Machine, Drilling Machine, Cubical for different types of Wiring Practice, Necessary tools, Tools Display Boards, 1-phase & 3-phase meters, Charts etc.

Electrical Machines Lab: Motor generator set, Photo voltaic test rig, Photo voltaic Electric generator, D.C. Compound Motor, D.C. Compound Generator, 3-phase induction motor, 3-phase slip ring induction motor, DC shunt motor, DC series motor, Universal motor, AC Synchronous Generator, AC Synchronous Motor, Scan Drive system for DC and AC drive speed control, Motor fault simulator, Logic pulse generator, function generator, Oscilloscope, Powerscope, Single Phase induction motor & Thyristor control panel, DG set, Stepper Motor Training System, PWM Induction Motor Drive

Circuits and Measurement Lab: Wave Analyzer, Double Channel Recorder, Analog Oscilloscope, DC Power supply unit (0-300V), DC power supply (0-60V) and Storage adapter, Wheat Stone Bridge, Kelvin Double Bridge, VTVM, Instrumentation tutor Part-II and III, Digital Storage Oscilloscope (2-channel), HP Computer (Pentium-III).

Power Electronics Lab: EMMA Microcomputer, Fast AD/DA converter, DDC Motor Module, Command Potentiometer, LCR Q-tester, SCR Firing Unit, Industrial Electronics Trainer and Oscilloscope, Digital Storage Oscilloscope (4-channel), HP Computer (Pentium-III), Motion Control Development Kit.

Control and Instrumentation Lab: DC position Servo Trainer Unit, AC Servo motor Speed/Torque Control Unit, DC motor speed control unit, Magnetic Amplifier, Synchro Transmitter and Receiver, Experimental PID Controller Unit, Digital ON-OFF Temperature Controller Unit and Experimental Bread Board

System, Analog Oscilloscopes, Digital Storage Oscilloscope (4-channel), Training & Development System for 8086, PC based Analog & Digital Motor Control Teaching Set, Programmable & Controller Teaching Set, Transducers & Instrumentation Trainer, Data Acquisition of Control System, Direct Digital Control Training System, Distributed Control System Trainer with water level controller application and temperature controller application module, IBM Computer (Pentium-III).

Electrical PC Labs: The department has one PC lab for undergraduate courses with 30 PCs and has established two more computer Labs for PG and Research with 10 computers and 20 more is expected to be installed shortly. The lab is equipped with latest software like MATLAB, MiPower, LABVIEW, PsPice. The department also has sufficient accessories printers to cater the needs of the students and faculty members.

Information Security Centre: The department has an Information Security Education and Awareness Project Center sponsored by Department of Information Technology, Ministry of Communications and Information Technology, Govt. of India. This centre has 10 PCs, two Servers, and other accessories.

The Department has its own Library. It has more than 200 books donated by the faculty members. The books for library have also been placed for purchase during 2006-07 amounting to more than Rs. One lakh.

Achievements

The Department is actively engaged in carrying our sponsored research and consultancy projects for more than Rs. 55.00 lakhs. The faculty members of the department has more than 100 Research papers published in the National/International Journals/Seminars/ Conferences during last five years, actively engaged in continuing education program by organizing short term courses/training programs and also actively participate in Institute Administration. The Department is also actively engaged in research and development work and has guided 5 research scholars leading to the award of Ph.D. under the guidance of Prof. K.Kumar, who is presently Director of this Institute.

Department of Electronics & Communication Engineering

Introduction and brief profile of the department

The Department of ECE was established in the year 1985. The first batch of intake was taken in 1986. The department of Electronics & Communication Engineering is now meeting the requirement of technological challenges & the technical man power requirement through its updated course curriculum, experienced faculty members, skilled supporting staffs, and with the help of sophisticated laboratories. The department has expertise in the areas of Optical fiber communication, DSP & Embedded systems, Microelectronics, Instrumentation, VLSI, Computer Communication, Microwave Engineering etc. The Department has dedicated faculty members, engaged to enhance the knowledge, skill & talents of the students.

The department offers courses in three modules: Base, Diploma and Degree in its undergraduate program, offering B.Tech. to the students who pass out degree module successfully. The courses of all the modules are designed by considering the present trends in technology suiting the needs of the industry to pursue technological skills in the field of Electronics and Communication Engineering, and to meet the technological needs of the country. The department offers two years Master Degree program in Information Technology offering M.Tech (IT) at the successful completion of the course. Recently the department has started M.Tech (by research), a part time Master Degree program of three years. A regular Master Degree Program offering M.Tech in Electronics & Communication Engineering is expected to start from the next academic calendar.

The department has fourteen qualified and young faculty members. It has thirteen laboratories equipped with sophisticated equipments and software, supported by skilled technical staff. With the supervision of dedicated faculty members, the students of the department are always engaged in developing technical skills and other co-curricular activities through NERIST Electronics Society (NES).

The department possesses well equipped seminar room to hold special academic activities such as Seminar, Expert Lecture Series, Workshops, Techno Quiz, and other activities which are organized by NERIST Electronics Society (NES) jointly with the department of ECE. Some modern laboratories in the field of VLSI, Embedded Systems & Computer Communication have been created to meet the requirements of PG programs and the Research activities in the department. Computer laboratories with high end machines and state-of-the-art software are used by students and the faculty members to carry out project and research

work. A Library inside the department is under development to support the academic thrust of the students and the faculty members of the department .The department has organized international and national conferences, and ISTE sponsored short term courses keeping in view of the recent trends in technology. The department has completed a number of MOD, R&D and thrust Area projects funded by the Ministry of HRD, DST and DOE of Govt. of India

Name of the Faculty with designation, qualification and area of Specialization:

Name	Designation	Area of Specialization
Md. Anwar Hussain, Ph.D.	Professor & **Head**	Communication Engg., Soft Information Security, Microwaves, Digital Signal
A.K Mal, Ph. D. **(On lien)**	Lecturer (Sr. Scale)	Microelectronics and Devices, VLSI Design
R.A.Mishra, M.S, Ph. D. **(On lien)**	Astt. Professor	Signal Processing & Devices, Microcontrollers and Mixed Circuit Design, VLSI
Rupaban Subadar, M.Tech. **(On QIP)**	Lecturer	Microprocessors & Microcontrollers, Digital Systems Design
Tripurari Sharan, B.Tech	Lecturer (Sr. Scale)	
L.Lolit Kr.Singh, M.Tech.	Lecturer (Sr. Scale)	Microwave Communication, Antenna Theory, Semiconductor devices.
Joyatri Bora, M.Tech	Lecturer	Digital circuit design, Satellite communication, Semiconductor Devices.
A. Dinamani Singh, B.Tech	Lecturer	
Pranab Kishore Dutta, M.Tech	Lecturer	Microcontrollers & Instrumentation, Digital systems Design, Semiconductor Devices.
Swanirbhar Majumder, M.Tech	Lecturer	Digital Signal Processing, Embedded Systems, Soft Computing & Advanced Microprocessors
Ashok Kumar Ray, B.Tech	Lecturer	
Madhusudhan Mishra, B. Tech	Lecturer	
Manish Kumar, B. Tech	Lecturer	

Facilities available

Departmental library: Departmental library consists of a good number of Technical books on all courses It is updated every year by procuring books worth Rs. 1 lakh granted by the Institute. Moreover magazines like Electronics for you & Linux for you are subscribed by NES for the department and are available in the Department Library. It supports the academic thrust of the students and the faculty members of the department.

Laboratories:

DSP & Embedded System Lab: The lab is equipped with Pentium IV computers with licensed Software for 45 embedded system kits of 8 bit, 16 bit & 32 bit microcontrollers as well as Power PC, DSP hybrid embedded system and Cold fire architecture. Other than these the lab has System View-ELANIX Software, FPGA Spartan-II as well as DSP boards, TMS-320C50 from Texas Instruments and also the latest TMS-6713 DSP kit for Image processing with daughter cards for CCD camera attachment along with the Licensed Code Composer Studio. Besides these the lab has also Agilent make Storage Oscilloscopes & Spectrum analyzer to carry out laboratory classes.

Audio and Video Lab: The lab is mainly meant for certificate and diploma courses. Here students undergo practical training for Radio Engineering, Audio and TV Engineering courses. It is equipped with various Radio, Audio & TV kits which allow detailed section wise study and testing of the different modules of various gadgets. Also Video Camera, 3-in one (CD/VCD, tape and radio) player, karaoke 5 CD changer, 11 channel audio mixer, DVD systems, as well as TV tuner card and DISH TV modules are available. Besides these the lab has all the common equipments like microphones, amplifiers, loudspeakers, etc. required to provide practical installation and troubleshooting of PA systems.

Computer-Networking Lab: This lab is mainly for PG course and UG & PG project works related to Networking and Computer Communication. It is equipped with sufficient number of Pentium-IV PCs with dual core processors and Software for network simulation like NS-2X and Glomosim. The department is also trying to procure Licensed OPNET software, I-Security & LAN Trainer Kits.

Radar and Antenna Lab: The lab is well equipped with Advance antenna units, Doppler Radar Set, X-band Microwave benches with all accessories, IE3D Software (MW Simulator), Spectrum Analyzer (20 GHz) Signal generators, and Different types of antennas. The lab is also being upgraded to hold practical classes in the area of RF field for the proposed PG Courses with inclusion of advanced equipments.

Electronic Workshop, Instrumentation & PCB laboratories: The labs are meant for UG courses in Instrumentation, Industrial Electronics etc. They provide maintenance and servicing training to the students in electronic equipments & gadgets and practices in Industrial Electronics etc. The students get exposure in transformer winding, trouble shooting & maintenance of various equipments, PCB making & Layout Design.

Digital Electronics Lab: This lab is equipped with sufficient number of Digital Logic Trainer kits, IC tester kits, 8085 and 8086 Microprocessor Kits & various Interfacing cards & software like XLTALK, MASM-6.1 & MASM-32, universal programmer (Super Pro along with software) for Micro-controllers.

PC Maintenance Lab: In this lab Diploma module Students get exposure in assembling and maintenance of PC hardware as well trouble shooting. Also they are trained to install Computer Soft wares.

Communication Lab: The lab is equipped with various communication (Analog & Digital) trainer kits, Signal generators, transmission line trainers, function generators and other accessories. The lab is also being upgraded for holding PG lab classes in the area of Communication Engineering.

VLSI Lab: This lab is being developed specially for PG & Research works in the area of VLSI design, Mixed Signal processing etc. for which proposals for SUNMICRO Workstations & Cadence Mixed Signal Software suite are being considered.

Sponsored Projects of the Department

No	Title of the Project	Funding Agencies	Sanctioned Amount Rs (in lacs)	Status of the Project
1	A novel approach to efficient and uninterrupted mobile & wireless communication in different cellular Zones.	MHRD, Govt. of India , New Delhi	8.00	Completed
2	An efficient & cost effective approach to use artificial neural network for design of 3rd generation wireless communication antennas.	MHRD, Govt. of India , New Delhi	6.50	Completed
3	Design & development of software for smooth speedier operation & maintenance.	DOE (presently Ministry of Information Technology)	2.7	Completed
4	Design & development of electronics & telecommunication products & system in network environment	- do -	1.7	Completed
5	Study and analysis of radiation efficiency of ferrite based micro strip antenna inside plasma medium.	DST, Govt. of India.	1.6	Completed
6	Modernization of PCB Laboratory with state of art facility (MOD)	MHRD, Govt. of India , New Delhi	6.0	Completed
7	Modernization of Digital signal processing Laboratory(MOD)	MHRD, Govt. of India , New Delhi	12.0	Completed
8	Neural network based receiver design for wireless communication as a pattern classification problem. (R&D)	MHRD, Govt. of India , New Delhi	5.0	completed

9	Design of smart wireless sensor for rail break and bulking detection for security in railways-An artificial neural network based approach. (R&D)	MHRD, Govt. of India , New Delhi	9.0	Ongoing
10	Quantum hypothesis and genetic algorithm based approach to develop artificial neural network code to design smart antennas for mobile communication- A spectrally efficient solutions. (Thrust Areas)	MHRD, Govt. of India , New Delhi	9.0	Completed

Achievements

Though the department has been running for the last 23 years only with the first batch of graduates coming out in July 1992 after a gestation period of 6 long years, the trend of placement of students is overwhelming. This is further supplemented by the excellent infrastructural facility and the latest and sophisticated equipments that the department has.

The department has completed a number of sponsored projects of MHRD, DST and DOE of Govt. of India. It has organized international and national conferences, and ISTE sponsored short term courses keeping in view of the recent trends in technology. Students and dedicated faculty members of the department have published their papers and research works in reputed technical journals (both international and national). Today students of the department are found everywhere - Asia, Africa, the US, the UK, Canada, etc. in very good positions besides many alumni working as managerial head in various organizations in our country. This is obviously due to the excellent academic curricula the department follows besides having very dynamic and efficient faculty members.

Department of Mechanical Engineering

Introduction and brief profile of the department

The Department of Mechanical Engineering consists of 20 highly qualified faculty, 24 well experienced staff members and 160 students (from 08 North Eastern States and all India). It offers courses to train the students in the art of servicing, maintenance and trouble shooting aspects in certificate level; to impart supervisory skills to the diploma module students and to provide analytical skills in various subjects related to Mechanical Engineering to the degree module students. The course curriculum for the degree module is at par with the premier institutions of the country. Moreover, laboratories (17 Nos.) and workshops (07 Nos.) are fully equipped with advanced equipments and machines. The

Department has qualified and experienced as well as young motivated faculty members and supporting staffs to train the manpower according to the need of the hour. The Department bears teacher student ratio 1:10. The relationship is warm and friendly. The students are free to discuss doubts related to academic matters in the chambers of the faculty members apart from the class hours.

Name of the Faculty with designation and qualification:

Name	Designation	Area of Specialization
M. Muralidhar, Ph.D.	Professor	Foundry & Forge Engineering
M. P. Thaddeus, Ph.D.	Lecturer (Sr. Scale)	Industrial Engineering, Robotics
Sunirmal Ray, MME	Lecturer (SG) & **Head**	Fluid Mechanics & Thermal Engg./CFD
C. M. Krishna, Ph.D	Lecturer (SG)	Industrial Engg. & Management
S. K. Panigrahi, Ph.D.	Astt. Professor	Composite Materials and structure, Fracture Mechanics, FEA, Machine Design & Stress Analysis
Pradip Lingfa, M. Tech.	Lecturer (SG)	Energy studies, alternate fuel
M. Chandrasekharan, M.Tech.	Lecturer (SG)	Fluid Power Control System
S. Mahto, M.Tech**. (On QIP)**	Lecturer (SG)	Design, CAD/CAM
K. K. Mandal, ME	Lecturer (Sr. Scale)	Low Temperature Machining
Sandeep Singh, M.Tech.	Lecturer (Sr. Scale)	Tribology, Value analysis, ISO 9000
S. Samanta, M. Tech.	Lecturer (Sr. Scale)	Ultrasonic & NDT
N. K. Rana, M.E.	Lecturer	Industrial Material & Metallurgy
Maryom Dabi, B.Tech.	Lecturer	
Satyam Shivam Gautam, Ph.D.	Lecturer	Machine Design & Tribology.
R. N. Rai, Ph.D.	Lecturer	Foundry and Forging
Amitava Mandal, M. Tech	Lecturer	Production Engineering

Facilities available

The department has following 17 Laboratories and 07 Workshops which are well equipped worth of around Rs.5.25 crores. The department has around 41 numbers Pentium III and IV computers. Internet with E-mail facilities are available in all faculty chambers, workshops and laboratories. The department has developed a CADD lab. and CIM and Robotics Lab under MODROB project. High quality printing facilities through laser jet, CD writer are important features of the computer lab. Dept. has AutoCAD, CATIA, ANSYS, VB Net, Lingo/Lindo SURFER softwares. Efforts are on to procure softwares like Pro-E WF2.0, H-Simulator, Mech Desktop to train the students in the recent trends in computational fields. Following equipments are placed in the various lab of the Department: Mortise machine, Jig Saw machine, Wood turning lathe, Band saw, Circular saw machine, Wood planer, Sanding machine Bench grinder. Roll Bending Machine, Hydraulic Power Hacksaw Machine, Piller Type Drilling

Machine, Pipe bending machine, Power press, Bench Grinder, Box type drilling machine, Shear cutter, Precision measuring instruments. Welding Transformer (Air cooled), Welding Transformer (Oil cooled), Mini Welder Transformer (Air cooled), Gas Welding & Cutting set, Pedestal grinding m/c, Air compressor, MIG-MAG M/c, Blow pipes, Pressure Regulators (Double stage/ single stage), Cutting torches, Necessary hand tools and other welding accessories e.g. apron, hand shield etc., Electric furnace, forging tools. Power Hack Saw machine, Shaping machine, Horizontal milling m/c, Radial Drilling m/c, Surface grinding m/c, Lathe machines (all geared), Lathe tool dynamometer, Pedestal Grinding m/c, Bench grinding m/c, Vernier Caliper, Bevel Protractor. Power Hack Saw m/c, Lathe m/c, Shaping m/c, Drilling m/c, Pedestal Grinding m/c.

Achievements

Department organized Short Term Courses in recent past on the subject of Experimental techniques for the Field Stress Analysis, Mechanical Engineering Design: A Concurrent Engg. Approach, Translating Ideas into Products & Patents, NBA Awareness Programme. One Departmental Library has been set up and running successfully. This year placed order for purchasing new books worth Rs.1.00 lakh for the Departmental Library. The department has taken up consultancy work for testing of materials for BSNL and PWD departments and other private agencies and already completed five research projects in recent past. One Community Polytechnic under the GOI scheme has been established. All the members are engaged in Research work in addition to the academic assignments. The research results are communicated to various forums at national and global levels.

Department of Physics

Introduction and brief profile of the Department:

The department of physics has **four** Professor, **three** Assistant Professors, **one** Senior Lecturers and **One** Lecturer.

In addition to teaching, the faculty members are actively involved in research activities and have been publishing research papers in both national and international journals. The field of specialization of physics faculty cover a wide spectrum of theoretical and experimental physics viz x-ray diffraction, polymer physics, plasma physics, experimental and theoretical nuclear physics, liquid crystals, solid state ionics, electronic filters, mathematical physics, semiconductor physics, superconductivity and laser Raman spectroscopy. Also, some of the

faculty members have acted as reviewers of DST and CSIR projects by other scientists for possible funding and Ph.D. thesis adjudicators.

Eleven sponsored research projects funded by DST, CSIR, MHRD and Third World Academy of science (TWAS), Italy have been completed in the field of liquid crystals and solid state ionics. **One** in-House mini Research project has been completed. Currently, **three** research projects funded by DST (1), CSIR (1) and IGNCA (1) are ongoing.

Two BOYSCAST fellowships of DST, New Delhi and **three** bilateral exchange fellowships of INSA, New Delhi-RSL & INSA-JSPS have been awarded to the faculty members of the department to pursue their collaborative research with scientists abroad.

Four Ph.D degrees (two in liquid crystals and one in solid state ionics) have been awarded to the research students worked in the projects mentioned above by NEHU, Shillong. Currently **five** more students are working for their Ph.D. degrees in the department.

Name of the Faculty with designation and qualification:

Name & Designation	Qualification &University	Specialization
A.Chatterjee, Ph.D**.**	Professor & **Head**	(i)x-ray crystallography (ii)Bimolecular structure
Rajendra..Prasad, Ph.D.	Professor	Exptl Nuclear Physics and Theor Plasma Physics
V. K.Dhar, Ph.D.	Professor	Polymer Physics
P. R. Alapati, Ph.D.	Professor	Condensed Matter Physics (Liquid Crystals)
Manan Sengupta, Ph.D.	Assistant Professor	Theoretical Physics
Sanjay, Ph.D.	Assistant Professor	Electronics-Active Filters
Tado Karlo, Ph.D.	Assistant Professor	Mathematical Physics
Arvind Pandey, Ph.D.	Lecturer (Sr. Scale)	Condensed Matter, Superconductivity, Solid state Ionics
Dr. Th. Gomti Devi, Ph.D.	Lecturer	Condensed matter Physics (laser Physics)

Facilities available

Teaching laboratories: The Department of Physics has three teaching laboratories for undergraduate program. Some of the major equipments in these laboratories are as follows:

1. Milliken's Experimental Setup
2. Frank-Hertz experiment setup
3. Hall effect study setup
4. Hysteresis measurement setup

5. Verification of Uncertainty Principle setup
6. Band gap measurement setup
7. Transistor characteristic
8. Solar cell experiment setup
9. Moment of Inertia measurement system
10. Hydrogen spectra measurement setup etc.

Computer laboratory: The has 15 Number of computers, one printer, one scanner and one CD writer. Some of the computers are connected via LAN facility.

Research labs: The department of Physics has four research laboratories. The description of labs along with the major equipments is given below:

Liquid Crystal Research Laboratory: Having sanctioned a first research project by D. S. T., New Delhi in 1993, Dr. P. R. Alapati had started a research laboratory for liquid crystals work in Jan. ' 1995 in an independent building provided by NERIST and over the years established the facilities for synthesis of liquid crystal materials, their characterization for liquid crystallinity and measurements of physical properties. The experimental facilities established include:

➢ Hot stage polarizing microscope
➢ Density measurement set up (bicapillary pyknometer technique -- INDEGENEOUS)
➢ Ultrasonic velocity measurement set up
➢ Impedance analyzer (HP 4192 A)
➢ Accessories (heating) for X-ray diffraction studies on liquid crystals using XRD facility available at Central Research facility of NERIST
➢ Facilities for synthesis of liquid crystal materials

Solid State lonies Research Laboratory: A solid state ionics research laboratory for batteries sensors and supercapacitors has been established in 1995 by Dr. S. A. Hashmi in a building space provided by NERIST to carry out his research work on a project funded by Department of Science & Technology, New Delhi. Over the years, following facilities have been developed in the laboratory:

➢ Medium Frequency (40Hz-100Hz) LCR Hi Tester (HIOKI, Japan).
➢ Low frequency (1mHz-100 KHz) computer controlled impedance analyzer (HIOKI, Japan).
➢ Computer controlled Analytical Work Station for Cyclic voltammetry, etc. (Sycopel, UK).
➢ Indigenous techniques to prepare ion! electron conducting polymers and for their basic characterization.

➢ X- Y-t Recorder (Graphtec, Japan).

Material Science Laboratory: This laboratory is established by Dr. Arvind Pandey & Dr. Sanjay to carry out research on a project funded by MHRD. The major equipments which are available:

➢ Keithley Electrometer
➢ Weighing Balance
➢ Microprocessor based High Temperature Furnace
➢ Ball Milling Machine
➢ Two Indigenously fabricated high temperature furnaces for high temperature electrical measurements (upto 1000^0C)

Some of the equipments in this lab were procured by Dr. H.M. Upadhayaya under the project funded by DST and are given below:

➢ Vacuum Coating Unit (Hind Hi-Vac., Banglore, India -Model 12A 4D) with facility of IEEE 488 interface and software.
➢ Source - Measure Unit (Keithley Instruments, USA - Model 236) with facility of IEEE 488 INTERFACE and software.
➢ Chemical Bath Deposition / electrodeposition set up for the preparation of semiconducting thin films and conducting polymers.
➢ Solar Cell Performance measurement set up with the W-Halogen lamp with varying intencity.
➢ Suryamapi, a device to measure the intensity of the light.

High Temperature Furnace Facility: Under the in-House mini Research Project Scheme and MHRD project Dr. Sanjay & Dr. Arvind Pandey have established a high temperature furnace room for preparation of ceramic compounds. They have fabricated a furnace indigenously at NERIST which can operate upto 1200^0C. One more furnace which can be operated up to 1000^0C is available in this laboratory.

CRF : Some major equipments in CRF are :

➢ XRD facility
➢ Laser Raman Spectroscopy setup
➢ IR sepectra facility
➢ CHN analyzer

Departmental library: The department is in the process of setting up its departmental library.

Department of Chemistry

Introduction and brief profile of the department

Department of Chemistry has been actively involved in teaching wide range of Chemistry Course as per requirement of the Engineering and Forestry Departments at the level of Certificate, Diploma and Degree Module. In view of the need of manpower in Chemistry at Post Graduate level in Arunachal Pradesh as well as to harness the natural resources available in the form of biodiversities, minerals, natural oil and gas, medicinal plants and variety of ingredients attracting chemical concern, the department of Chemistry is to commence M.Sc. Programme in Chemistry from the academic session 2009-2020. It will provide enough opportunities and benefits to the people in the area of petrochemical, paper and pulp and meteorological Industry as well as in food processing industries involving natural pigments as additives, antioxidants and perspective etc. For M.Sc programme following faculty memebr4s having wide range of experience in Chemical Science are available.

Name of the Faculty with designation and qualification:

Name	Qualification	Specialization
M. Hussain, Ph.D.	Professor	Organic Chemistry
H. S. Yadav, Ph.D.	Professor	Inorganic Chemistry
P. K. Tripathi, Ph.D.	Professor	Organic Chemistry
M. F. Hussain Ph.D.	Professor	Physical Chemistry
K. D. Ram, Ph.D.	Professor	Physical Chemistry
N. Deb, Ph.D.	Assistant Professor	Physical Chemistry
A. K. Gupta, Ph.D.	Assistant Professor	Organic Chemistry
K. T. Kamal, Ph.D.	Assistant Professor	Organic Chemistry
K. S. Singh	Lecturer	Inorganic Chemistry

Facilities available

The Department has initiated necessary steps to establish the infrastructure to run the M.Sc. programme. At present, there are two laboratories for experimental work and one computational lab with UV spectrophotometer and DSC, which are being used for undergraduate courses. The Library room with Xerox facility is available where P.G. level books will be housed.

Achievements

The faculty members of the Chemistry Department are actively involved in multidimensional research embracing both basic and applied aspects of Chemistry. The major activities can be grouped under.

Organic Chemistry: Convenient methods for the evaluation of organic oxidation and reduction processes, synthetic and reaction mechanism involving carboxylic and heterocyclic compounds; cholesterol compounds-activity studies.

Inorganic Chemistry: Macrocyclic complexes of transition metals having applications in industries and biological system, natural products like Amavadin and its molybdenum analogues, Selenium based catalysts in the organic transformation reactions as one electron mediators, green chemistry methodology in the synthesis of menadione (Vitamin K_3).

Physical Chemistry: Studies on self purification power of river water, analysis of heavy metals in river water and co-precipitation studies of heavy metals using organic ligands, Radio chemistry concerning application of radioisotopes for chemical investigation, kinetics of isotopic exchange reaction. Kinetics and mechanism of degradation pattern of heterometallic and polymetallic carboxylates with the special reference to catalytic activity.

Some faculty members of the department had post doctoral visits in U.K. and Polish universities under Nehru Centenary British Fellowship award and INSA – PAS academic exchange programme and acquired experience in highly specialized area of chemical science.

Department of Mathematics

Introduction and brief profile of the department

The department of Mathematics came into existence as a full-fledged department in 1993. Earlier, it was a part of the Physical Science Group since the inception of the Institute in 1986. The department has highly qualified faculty members with a wide variety of specializations with a mix of both Pure & Applied Mathematics. This is a rare combination even in most of the Universities of the country.

In addition to teaching, the faculty members are actively involved in research. The department is a member of NBHM, Department of Atomic Energy, Govt. of India, which provides new books and journals free of cost regularly. The department has produced one Ph.D in 2006. Currently, six research students have been registered for Ph.D. programme. Also some of the faculty members have acted as reviewers of Defence Science journals, Mathematical Review and examined several Ph.D. theses of different Universities.

At present, there are **Two Professors, Three Assistant Professors and Three Lecturers.**

Name of the Faculty with designation and qualification:

Name	Qualification	Specialization
J. Choubey, Ph.D.	Professor	Number Theory
P. K. Das, Ph.D.	Professor	Graph Theory, Cominatorics, Soft Computing
S. K.Pandey, Ph.D.	Professor	Continuum Mechanics, Sub-surface flow
A. S. Rai, Ph.D.	Assistant Professor	Gasdynamics, Magnetohydrodynamics & Shock Waves
L. K. Arora, Ph.D.	Professor **& Head**	Special Functions
B. K. Singh, Ph.D.	Lecturer (Sr. Scale)	Sampling Technique
M.M. Dixit, Ph.D.	Lecturer	Continuous and Discrete Bessel, Wavelet Transform
J. Borah, M.Sc.	Lecturer	

Facilities available in the department:

Teaching Laboratories: The department has one teaching laboratory for under graduate programme named as Numerical Methods Laboratory fully equipped with 16 computers connected via LAN facility.

Computing facilities for teachers: There are five computers, three printers, one Scanner, one Server. All are connected with internet.

The department has set up its departmental library for the proper use of Books, Journals supplied by NBHM & Central Library of the Institute.

Achievements of the department:

Sponsored Research Projects :   One (Completed) Application of set technology in Medical diagnosis and Decision making.

Other relevant Information:

- Two short term courses were organized in the department
- 80 Nos of Research papers have been published by the department in International/National journals.
- The Department is going to start its M.Sc. programme from July, 2009.
- 06 research students are working   for their Ph.D. programme.

Any other relevant information such as approval of the Academic council AICTE etc.

M.Sc. Mathematics Programme has been approved by the Academic Council of the Institute in 2008.

Department of Forestry

Introduction and brief profile of the department

The Department of Forestry under Applied Science Stream, since the establishment of NERIST has been developing its infrastructure facilities and imparting good Forestry Education in the form of Certificate, B.Sc., M.Sc. and Ph.D. (Forestry) courses to the students of the North Eastern Region in particular and the country in general.

Certificate level in Forestry is at par with 10+2 level vocational courses designed by NCERT. As the candidates move up to higher modules they get exposure to more technical and management aspects of forestry making them suitable for taking up activities related to sustainable management of Forest. Department of Forestry is also engaged in taking interdisciplinary courses for PG programme in Environmental Science and Engineering. Since 2007, the Department is also running the M.Sc. programme in forestry and Ph. D. programme as well.

Apart from teaching, the members of faculty of Forestry are also actively involved in conducting research work in different field of forest and biodiversity conservation and guiding Ph.D. students in their respective filed of specializations. The department has produced so far 20 doctoral theses leading to Ph.D. degrees in various aspects of natural resource management and biodiversity conservation. The Forestry course assumes greater significance as the North Eastern region which provides a rich biodiversity hot spot and it is required to be conserved and utilized on a sustainable basis. It is hoped that the forestry courses offered in NERIST will help to generate man power with better understanding of conservation aspects of natural resources and sustainable utilization of their products.

The students are given exposure and training in various forest-based aspects through project work on the ecological problems of north-east India such as, eco-restoration of degraded land, alternative to shifting cultivation, traditional practices of resource utilization, inventory and biodiversity conservation, biological management of soil fertility, good properties variations, wood anatomical changes due to environmental fluctuation and Silviculture treatments, tree physiology, nursery technology, plant pathology, wildlife management and entomology. Students completing the degree courses are being placed in state civil service, private firms and in NGOs engaged in forest and forestry related activities.

Name of the Faculty with designation and qualification:

Name of Faculty	Designation	Specialization
P. Rethy, Ph.D	Professor	Biosystematics.
M.L.Khan, Ph.D.	Professor	Forest Ecology, Biodiversity Conservation & Silviculture.
Binay Singh, Ph.D.	Professor	Horticulture.
C.L.Sharma, Ph.D	Asstt. Professor	Wood Science & Technology.
A. Arunachalam, Ph.D.	Asstt. Professor	Restoration Ecology, Environment & Natural Resources Management
Mary P.P., Ph.D.	Asstt. Professor	Wildlife Conservation and Management.
Madhu Sharma, Ph.D.	Asstt. Professor	Wood Science & Technology.
K. Shrivastava, Ph.D	Asstt. Professor	Microbial Aerobiology & Plant Pathology.
K. Arunachalam, Ph.D. **(On deputation)**	Asstt. Professor	Soil Biology & Ecology.
P.R.Gajurel, Ph.D.	Lecturer	Plant Taxonomy, Ethnobotany & Medicinal Plants.
O.P.Tripathi, Ph.D.	Lecturer	Forest Ecology, Biodiversity Conservation, RS & GIS.
L. B.Singha, Ph.D.	Lecturer	Forest Ecology, Plant Biochemistry.
Awadhesh Kumar, Ph.D.	Lecturer	Wildlife Behavioural Ecology and Conservation.
Govinda Pangging, M.Sc.	Lecturer	Forest Economics and Management.
S.Sureshkumar Singh, Ph.D.	Lecturer	Plant Biotechnology & Microbial Ecology.

Note: Field visit to protected areas, forest based industries, community forest sites, sacred groves, technology demonstration sites and forest based systems would be part of the curriculum in all the semester.

Field visit to protected areas, forest based industries, community forest sites, sacred groves, technology demonstration sites and forest based systems would be part of the curriculum in all the semester.

Facilities available

The Department has 8 well equipped laboratories for conducting practical classes and R & D activities inside the department beside three field labs (Nursery, Net house & Mist chamber). The Research Laboratory of the Department caters to the need of research activities of the department. It may be mentioned that the department has more than 40 research projects (completed/ongoing) sponsored by several funding agencies like MHRD, DST, CSIR, MoEF, UNESCO, GBPIHED, ICAR, ICFRE, DBT, ISRO, DSIR, FNDP etc.

Laboratories of Forestry are well equipped with conventional and sophisticated instruments and apparatus like seed germinator, BOD incubator, portable leaf area meter (Licor), laminar air-flow chamber, rotary shaker, refrigerated

centrifuge, refrigerator, deep freezer, hot air oven, muffle furnace, spectrophotometer, flame photometer, colony counter, autoclave, electronic balance, research microscopes (Leica), stereo microscope (Zeiss), wood microtome, circular saw, automatic weather station, PCR systems, Gas Chromatograph, Socs Plus and Fibra Plus, Kelplus Digitaizer, HP Plotter-500, Light Table, Stereoscope, ERDAS Imagine Software, Laminar Air Flow, Quertz double Distillation unit, Digital Balance(Micro), Weather system etc Polymerase Chain reaction Machines (02 nos, ABI and Appendorf).

Gel Documentation System (01 no, LB), Millipore Water System (01, Millipore), Laminar Flow Chamber (01, ICT),Gas Chromatography (01, Chemito) for conducting different experiments for student's practices at various modules as well as research activities. Well developed departmental computer centre and Library provides the resources to students and faculties to carry out their academic and research activities. The department has good number of computers with internet on LAN and printing facilities.

The Department of Forestry houses a Library of about 500 books on various areas of Biodiversity, Forestry, Biotechnology, Ecology & Environmental Science, Taxonomy, Animal Sciences & Wildlife, Microbiology, Silviculture, Wood Science & Technology, Remote Sensing, Agronomy, Horticulture, Plant Physiology, Aerobiology, etc.

Research Projects

Completed Projects - 22 nos.

Ongoing Projects:

1. Mapping and quantitative assessment of geographic distribution and population status of plant resources of Eastern Himalayan region. Coordinated project. (Principal Investigator – Dr. M.L. Khan); Funded by Department of Biotechnology (DBT), New Delhi (Total budget - Rs. 35.35 lakhs).

2. Mapping of population status and conservation strategies of *Taxus wallichiana* Zucc. and *Illicium griffithii* Hook.– two threatened medicinal tree species in Arunachal Pradesh. (Principal Investigator – Dr. M.L. Khan); Funded by CSIR, New Delhi (Total budget - Rs.14 lakhs).

3. Biomass and Carbon Assessment in India. (Principal Investigator – Dr. M.L. Khan); Funded by IIRS, Dehra Dun. (Total budget - Rs. 8 lakhs).

4. Rodent control and Ecological analysis of the impact of bamboo flowering in Arunachal Pradesh and Mizoram of North East India. Funded by DST, New Delhi (Total budget - Rs. 24 lakhs).

5. Inventory of biodiversity in agricultural landscapes, economic uses and conservation for sustainable development in Eastern Himalayan region of Arunachal Pradesh. Funded by DST, New Delhi (Total budget - Rs.17 lakhs).

6. `Studies on land use dynamics and environmental restoration in and around monasteries in Tawang district of Arunachal Pradesh', (Dr. A. Arunachalam, Principal Investigator) - Sponsored by the G.B. Pant Institute of Himalayan Environment & Development, Almora (Total budget: Rs. 6,48,120; Sanction letter # GBPI/IERP/03-04/15 (CP) dt. 30-3-2004); Co-Investigators: Dr. Kusum Arunachalam and Dr. R.C. Joshi.

7. "Identification of mechanization gaps and popularization of improved agri-horticultural implements for rural development in Arunachal Pradesh', (Dr. A.Arunachalam, Principal Co-Investigator) - Sponsored by the Department of Scientific & Technology, New Delhi (Total budget: Rs. 9.85 lakhs approx.; Sanction letter # SP/RD/074/2003-TIME dt. 2-3-2005); Principal Investigator: Mr. Prasanna Kumar.

8. `Changing land use/land cover and soil loss in the Indian eastern Himalayas, a drainage basin input-output analysis, Arunachal Pradesh', (Dr. A.Arunachalam, Principal Co-Investigator) - Sponsored by the G.B. Pant Institute of Himalayan Environment & Development, Almora (Total budget: Rs. 5,99,725; Sanction letter # GBPI/IERP/03-04/NE-WS/33/806 dt. 11-3-2005); Principal Investigator: Dr. R.C. Joshi, RGU, Doimukh

9. `Studies on the molecular basis of fungal diversity associated with *Aquilaria agallocha,* a medicinally important tree species', (Dr. Karuna Shrivastava, Principal Investigator) Sponsored by the Ministry of Human Resource Development (Total budget: Rs. 10 lakhs; Sanction letter # F.26-11/2004.TS.V dt. 31-3-2005); Co-Investigators: Dr. A.Arunachalam & Dr. Kusum Arunachalam.

10. `Environmental Assessment of Traditional Agricultural Waste Management Practices in Arunachal Pradesh', (Dr. A.Arunachalam, Principal Investigator) - Sponsored by the Ministry of Human Resource Development (Total budget: Rs. 16 lakhs; Sanction letter # F.26-11/2004.TS.V. dt. 31-3-2005); Co-Investigator: Dr. Kusum Arunachalam.

11. `ICFRE Grant-in-Aid (2005-06)' for strengthening Forestry Research & Education. (Dr. A.Arunachalam, Coordinator) Funded by the Indian Council of Forestry Research and Education, Dehra Dun (Total budget: Rs. 12.812 lakhs).

12. `Studies on wetland ecology in relation to human livelihoods in Burhachapori forest reserve in the south bank of Brahmaputra river basin in Assam', (Dr. A.Arunachalam, Principal Investigator) - Sponsored by the Council of Scientific and Industrial Research (Total budget: Rs.9.4 lakhs; Sanction letter # 24(0283)/05/EMR-II dt. 16-9-2005); Co-Investigator: Dr. Kusum Arunachalam.

13. `Vermicomposting and its application in rural agricultural Development: A socio-biological study in Papum Pare district of Arunachal Pradesh', (Dr. A.Arunachalam, Principal Investigator) - Sponsored by Department of Science & Technology (Total budget: Rs. 5.69 lakhs; Sanction letter # SP/RD/029/2005 dt. 29 May 2006 , Co-Investigator: Dr. Kusum Arunachalam

14. `Carbon budget assessment in terrestrial ecosystems of Arunachal Pradesh', (Dr. A.Arunachalam, Principal Investigator) - Sponsored by ISRO through NRSA-IIRS (Total budget: Rs. 4.84 lakhs; Co-Investigator: Dr. Kusum Arunachalam.

15. "Cultural Landscapes: The Basis for Linking Biodiversity Conservation with Sustainable Development of North-Eastern Hill Eastern Region", (Dr. A.Arunachalam, Principal Investigator) - Sponsored by the UNESCO-MacArthur Foundation (Total budget: US$30000); Academic Coordinators: Professor P.S. Ramakrishnan and Professor K.G. Saxena, JNU, New Delhi; Co-Investigator – Mr. G. Pangging.

16. `Environmental and socio-economic assessment of bio-monitoring of water filter in mitigating water borne diseases', (Dr. Rakesh Kumar, Principal Investigator) - Sponsored by the Department of Science & Technology, New Delhi (Total budget: Rs. 16 lakhs); Principal Investigator: Dr. Rakesh Kumar; Co-Investigators: Dr. A.Arunachalam, Dr. O.P. Tripathi, Mr. B. Devi and Mr. K. Singh.

17. 'Impact assessment of Bamboo Flowering on Ecological and Seriocomic account of Eastern Himalaya, India' (Dr. L.B.Singha Principal Investigator)- sponsored by DST, New Delhi; (Total budget Rs.23.62 lakhs); Co-investigator- Dr. M.L.Khan.

18. *"SoE Reporting in Arunachal Pradesh"* (Project Director - Dr. P.Rethy)- Sponsored by MOEN, New Delhi; (Total budget Rs.6.00 lakhs).

19. *"Agrobiodiversity in Arunachal Pradesh"* (Dr. O.P.Tripathi, Principal Investigator) - Sponsored by DST, New Delhi; (Total budget - Rs.16.6 lakhs); Co-investigator - Dr M.L.Khan).

20. *"Study on NTFP in Arunachal Pradesh"* (Dr. P.Rethy, Principal Investigator) Sponsored by DST, budget Rs.16 lakhs).

21. *"Molecular characterization of fungal diversity associated with *Aquilaria agallocha,* a medicinally important tree species."* (Dr. Karuna Shrivastava – Principal Investigator; Sponsored by MHRD, New Delhi; Total budget - Rs. 10.00 lakhs); Co-Investigators: Dr. A.Arunachalam & Dr. Kusum Arunachalam.

22. *"Bioinformatics Infrastructure Facility",* (Coordinator - Dr. S.S.Singh) – Sponsored by DBT, New Delhi; (Total budget Rs. 20.00 lakhs).

23. *"Tissue culture of *Aquilaria agallocha,* a medicinally important tree species and their field trial adopting biotechnological approach."* (Dr. K. Shrivastava –Principal Investigator); Sponsored by AICTE, New Delhi (Total budget – Rs. 9.5 lakhs); Co-Investigator - Dr. S. S. Singh.

Achievements:

The department has been running Certificate and Degree course in Forestry since 1986 and since 2007, the department also started M.Sc. and Ph.D. programmes in Forestry. The faculty of the department are well trained and have been well recognized in the country. Some of the faculty are National Awardees and have availed national and international fellowships. So, far the department has produced over 20 Ph.D. students. The degree students have been placed in good NGOs, tea estates and companies of good repute through campus placement. There are a good number of sponsored research projects through which manpower with academic spirit is generated in the north-eastern region.

Department of Humanities and Social Sciences
(Center for Management Studies)

Introduction and brief profile of the department

The Department of Humanities and Social Sciences is currently offering both UG courses for Base, Diploma, Degree Modules at UG level and PG courses for MBA and Ph. D. Programmes. The full time MBA programme was started in the year 2006 under the Department of Humanities and Social Sciences and it has been running successfully since then. The Department has a well equipped computer laboratory with Wi-fi and LAN connectivity, a well stocked library, air conditioned classrooms and a Communication Skills Laboratory, and seminar hall with required infrastructure.

The teaching approach focuses on dynamic participation of learners through Case Analysis, Group Discussion, Role Play, Power Point Presentations, Quizzes, Seminars, Extempore speeches, Guest Talks by eminent personalities and various resource persons. It is also backed up by Personality Development Programmes and Management related activities conducted periodically.

The Department provides ample opportunity to the students to harness their skills and knowledge and to meet the dynamic requirements of various industries and business. The Management Forum of NERIST (MaFoN) provides the students with ample opportunities to develop talent and potential, and in the process, unleash their creativity and innovativeness. The Management students are required to pay a sum of Rs.1000 (One thousand) only, as MaFoN fee at the time of their admission in the Department of Humanities and Social Sciences.

The Department is providing dual specializations in Finance, Human Resource Management, Production/Operations Management, Marketing Management, Entrepreneurship and Small Business Management and Systems Management.

Objectives/activities:
1. To install young minds with analytical and reasoning abilities, leadership and managerial qualities and overall personality development.
2. To take up research work and real life case studies and case development in the field of management.
3. To establish linkages with industry, business houses and academia.
4. Knowledge sharing with other reputed management institutions.

Faculty members with designation and qualification:

Name	Designation	Area of Specialization
R.M. Pant, Ph.D.	Professor	Labour Economics, HRD, Marketing Management
B.D. Nayak, Ph.D.	Asstt. Professor & **Head**	Rural Development, Finance & Project Management, Entrepreneurship Dev.
P. Parida, Ph.D. **(On lien)**	Asstt. Professor	
Ranendra Prasad **(On lien)**	Lecturer (SG)	Indian English Fiction & Literary Theory
S. J. Neethirajan, Ph.D.	Lecturer (Sr. Scale)	
S. Sinha, Ph.D.	Asst. Professor	HRM, Organizational Behaviour
S. K. Tapasvi, Ph.D.	Asstt. Prof.	
Raju Barthakur, M.A.	Lecturer	English, Communication Skills
S. Choudhury, MBA	Lecturer	Information System
Bijoylaxmi Srmah, MBA	Lecturer	HRM and Marketing
Jogita Sorokhairbam, MBA	Lecturer	HRM and Marketing
Archana Kumari, M.A.	Lecturer(Ad-hoc)	English

Visiting faculty members from other Departments and Institutions are engaged in MBA programme as and when required.

The Specialization: MBA students can specialize in any two of the following streams:

- Financial Management
- Human Resource Management
- Production/Operation Management
- Marketing Management
- Entrepreneurship and Small Business Management
- Systems Management