INFORMATION BROCHURE

Post Graduate & Ph.D. Programmes

Academic Session: 2021-2022

M. Sc. , M. Tech, MBA & Ph. D. (Full Time / Part Time)



NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE & TECHNOLOGY

[Deemed-to-be-University, Under Section 3 of the UGC Act, 1956]

[Under Ministry of Education, Govt. of India, New Delhi]

Nirjuli, Arunachal Pradesh. 791109

Important Dates	
Online Registration /Application Submission for PG/Ph.D. Admission	5th April, 2021(Monday) to 4th June, 2021 (Friday)
Date of uploading of Admit Cards in the website	30th June, 2021 (Wednesday)
Written Test (Ph.D.)	10th July, 2021(Saturday)
Written Test (PG)	11th July, 2021 (Sunday)
Interview/Group Discussion(MBA)	11th July, 2021(Sunday) 2:30 PM Onwards Venue: CMS
Publication of eligible candidates list for Interaction required for admission in Ph.D. Courses.	By 19th July, 2021 (Wednesday) [List will be displayed on Institute website]
Interaction of Ph.D. Written Qualified candidates	26th July, 2021(Monday)
Declaration of result	27th July, 2021(Tuesday) [Result will be displayed on Institute website]
PG Counselling/Admission and Course registration for MBA, M.Tech., M.Sc. & Ph.D.	4th August (Wednesday), 2021 for Selected & Waitlisted Candidates of MBA & M.Sc.
	5th August (Thursday), 2021 for Selected list & Waitlisted Candidates of M.Tech.
	6th August (Friday), 2021 for Selected list of Ph.D.
Fresher's Orientation Programme for UG & PG	6th August (Friday) 2021 at 5.00 p.m.

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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. By July, 2019, twenty-seven batches have completed their degrees in Agricultural Engineering, Civil Engineering, Computer Science & Engineering, Electronics & Communication Engineering, Electrical Engineering, Mechanical Engineering and Forestry. In addition to the undergraduate programmes, the Institute also offers M.Sc. in Physics, Chemistry, Mathematics & Forestry, M. Tech., M.B.A. (Full Time) and Ph.D. (Full Time and Part Time) Programmes.

The Institute attained the status of Deemed-to-be-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 Education, Govt. of India.

2. Location

Arunachal Pradesh is the land of exotic orchids and lush green hills. 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 415. It is about 20 km from Itanagar, the capital complex of Arunachal Pradesh. It provides an ideal setting for a seat of higher and technical education with a backdrop of quiet and pristine surroundings.

Located at a distance of 400 km (approx.) from Guwahati, the Institute can be accessed by rail, road or air. Super Deluxe buses from Guwahati are available daily. Taxies can also be hired at Guwahati for coming to the Institute. An overnight Intercity Express and Shatabdi Express (thrice in a week) connect Guwahati-Naharlagun which is the nearest railway station and is about 18 km from NERIST.

3. Mission and Vision of the Institute

Mission:

1. Creating a niche in the field of science and technology education and research through an innovative modular system.
2. Producing globally competitive technical and scientific manpower in different disciplines with high ethical values and with particular reference to the North Eastern region.
3. Introducing in engineers/technologist and trainees a mind-set full of creativity to pursue excellence with focus on stakeholders, accountability, environment and people.
4. Developing collaborations with world class R&D organizations, industries and educational institutions in India and abroad for attaining excellence in teaching research and consultancy practices.

Vision:

To produce professionals with competency for pursuing excellence in Science and Technology Education, Research, and Entrepreneurship with ethical values and social sensitivity for offering specialized services to the society meeting the global requirements and standards in a multicultural environment.

4. Eligibility

Admission to all the programmes of M.Sc., M.Tech., MBA and Ph.D. (FT & PT) of the Institute is open to all Indian Nationals. NRI, foreign students are also allowed for the admission provided they fulfil eligibility criteria and obtain clearance from Govt. of India. A candidate employed in any Govt./semi Govt. Department/Organization etc. must enclose a **"No Objection Certificate"** as per format in **Annexure-II (for PG) and Annexure-IV (for Ph.D.)** from the Employer stating that he/she will be relieved for the study during the period of the programme.

Candidates must possess the educational qualifications as stated below for applying to the programmes.

M.Sc. in Forestry: 4-year Bachelor of Science in Forestry with a CGPA 6.5 on a 10 point scale or 60% marks in aggregate. 5% marks relaxation will be given to SC/ST/PWD Category.

M.Sc. in Physics/Mathematics: B.Sc. in Physics/Mathematics with 55% marks in aggregate (Pass Course) and 50% marks in major/honours subject. 5% marks relaxation will be given to SC/ST/PWD Category.

M.Sc. in Chemistry: B.Sc. in Chemistry with Mathematics having 55% marks in aggregate and 50% marks for major/honours in chemistry.

M. Tech.: B. Tech. or equivalent degree with a CGPA 6.5 on a 10 point scale or 60% marks in aggregate for General Category with valid GATE Score. 5% marks relaxation will be given to SC/ST/PWD category Candidates. Candidates without GATE score will also be considered, subject to availability of seats.

MBA: Bachelor Degree in any discipline/courses approved by UGC or AICTE, with 55% marks in aggregate and 50% for SC/ST Category.

Ph.D. (Full Time & Part Time): Candidates having Master's Degree in Engineering & Technology with 60% marks in aggregate or CGPA 6.5 on 10 point scale and 55% marks in aggregate in Science/Humanities for General category. 5% marks relaxation will be given to SC/ST/PWD category in both the cases. Applicants, who wish to pursue Ph.D. while in employment /service, need to submit NOC from **(Annexure-IV)** their employer at the time of counselling cum admission.

5. Reservation:

Seats will be reserved for the candidates of SC, ST, OBC (NCL), PWD and EWS Category as per rules of Govt. of India.

6. Anti-Ragging Undertaking Mandatory for all students:

Ragging is banned in the Institute. Anyone, who is found indulging in ragging directly or indirectly during the entire period of his/her study, will be punished as per the institute bye-laws. The punishment may include actions under penal laws, expulsion from the Institute, and suspension from the Institute or fine with a public apology. It may also take the shape of (i) withholding his/her results, (ii) withholding his/her scholarships or other benefits, (iii) suspension or expulsion from hostel or mess or collective punishment, and/or (iv) mentioning the act of indulgence in ragging in his/her Conduct certificates, etc.

Further, it is also informed that the students are required to fill the anti-ragging undertaking on either of the following websites (www.AMANMOVEMENT.org or www.ANTIRAGGING.in and the **hard copy of the undertaking, as received by email, should be submitted to the Institute at the time admission and also at the time July-December Semester registration every year.**

7. (A) Sponsored Candidates (for PG Programme only)

Sponsored candidates are also eligible to apply for this Programme. Sponsoring Certificate from the employer as per format in **Annexure I** 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 study and all fees will be paid by the organization (sponsor). Self-sponsored candidates without GATE score may also be considered subject to availability of seats.

(B) Sponsored Candidates (for Ph.D. Programme only)

Sponsored candidates are also eligible to apply for this Programme. Sponsoring Certificate from the employer as per format in **Annexure III** 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 study and all fees will be paid by the organization (sponsor). Other rules and regulations will be governed by the UGC/AICTE from time to time.

8. HOW TO APPLY FOR POST GRADUATE AND Ph.D. PROGRAMME FOR 2021-22

Before filling up the online application form, candidates must read the instructions given below very carefully. For any assistance please feel free to contact our HELPLINE NOS: +91 8584824065 / +91 6292218758

For any query, a candidate can also send email in the following Email ID:- infonee@nerist.ac.in

I. Candidates must apply for **NEPGET 2021 "ONLINE"** ONLY by logging in the website **www.neeonline.ac.in** or **www.nerist.ac.in**

a. Candidates must follow the instructions strictly as appear in the instruction panel.
b. Candidates can fill up the entire form in one session or enter one part of the information and save and complete the same at a later stage within the due dates of filling and submitting the form. Candidates are requested to carefully check all the data entered before final submission of form. Any error may lead to rejection of their application at any stage of time.
c. **Be careful while filling up each of the fields or selecting an option from the drop down menu such as course** etc. For example, a list of courses is mentioned along with the relevant field so that you can select the correct course /Programme.
d. Candidates appearing in the qualifying examination in 2021 are also eligible to apply. However, they must produce mark sheets/grade cards/pass certificates on the day of counseling/admission. Otherwise their selection will be cancelled.
e. Online application can be done within **05/04/2021 to 04/06/2021**
f. Application fee is **Rs.1000/-+** bank transaction charges for all category candidates. **Application fee is non-refundable/non-transferable.**
g. After the final submission of application form, no changes can be made by the applicant in his/her online application.
h. Request for change of any kind of data such as category, Centre of Examination, etc. shall summarily be rejected. Application once submitted shall be final.

Guidelines to fill up the Online Application Form for
NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE & TECHNOLOGY (NERIST)
Nirjuli, Itanagar for the Academic Session 2021-2022

Applicants are required to keep the following things ready before applying:

1. An Email ID for registration and for receiving all future correspondence till the admission process is over and subsequently, if admitted.
2. One Mobile Number to receive SMS based notifications/communications related to the online application; Admit card etc. till the admission process is over and subsequently, if admitted.
3. Facility with internet connectivity.
4. A recent scanned **passport** sized colour **photograph** (for scanning and uploading in "jpeg" format only. File size should Less than 100KB).
5. Your scanned **signature** using **Blue/Black** pen on white sheet (for scanning and uploading in "jpeg" format only. File size should Less than 100KB).
6. Scanned/Soft copy of NET/GATE/CAT/MAT/SLET/M.Phil./Lecturer Fellowship score card/ certificate. (Less than 100KB)
7. Copy of ST/SC/OBC (Non Creamy Layer)/EWS (Annexure-VI) should be produced in original during counselling cum admission.
8. Access to an online payment facility/service such as
    1. Net Banking
    2. Credit card
    3. ATM-cum-Debit card

Important Notes for all applicants:

1. A printout of the submitted online application form is to be retained by the candidate; the same has to be submitted along with the self-attested copies of supporting documents and the online application fee paid receipt at the time of counselling / admission, if selected.
2. Original certificates issued by the Competent Authority supporting your filled in details will be asked from you ONLY at the time of verification of documents / Counselling / admission. If data provided in the online application is not supported by appropriate documents, then your application/claim for admission shall be summarily rejected.

Steps to be followed for filling the online application:

The entire process of filling online application form can be completed in below mentioned 9 steps.

The steps are:

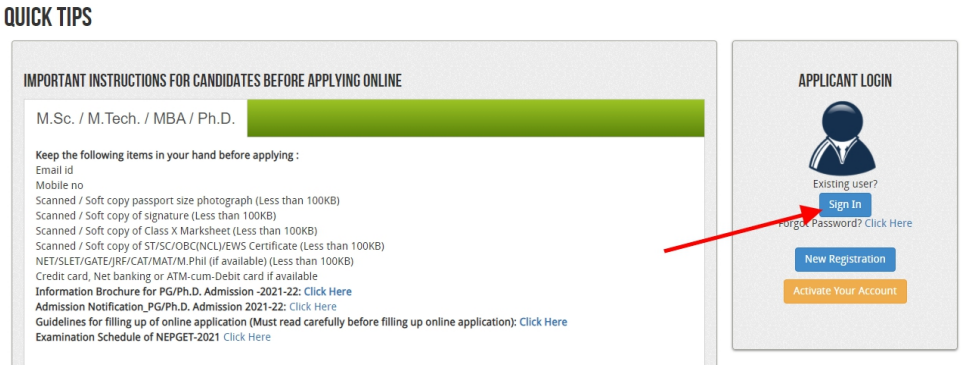
1. Register yourself for the online application process at **www.neeonline.ac.in or through institute website www.nerist.ac.in**
2. Activate your online Application with the Email ID and Your Activation Code; send it to your submitted Email ID / Mobile No in registration process.
3. Selection of the Program Type & Program Name and check the eligibility.
4. If the applicant confirms the eligibility criteria and continues the Program, the next web page appears. The applicant is required to click on “Application Details”. The application form will appear on the screen. The applicant is required to fill up the details in the application form.

5. In the next step, the applicant is required to upload scanned image file of his/her Photograph and Signature one by one [as specified in Para 4 & 5 above].
6. In the next step, the applicant is required to fill the Academic details.
7. In the next step, the applicant is required to choose your Document details.
8. Once all the details are filled in, the candidate is required to Review the details entered and Confirm. No edit will be allowed once the application is confirmed.
9. Payment of fee's through ONLINE MODE only.

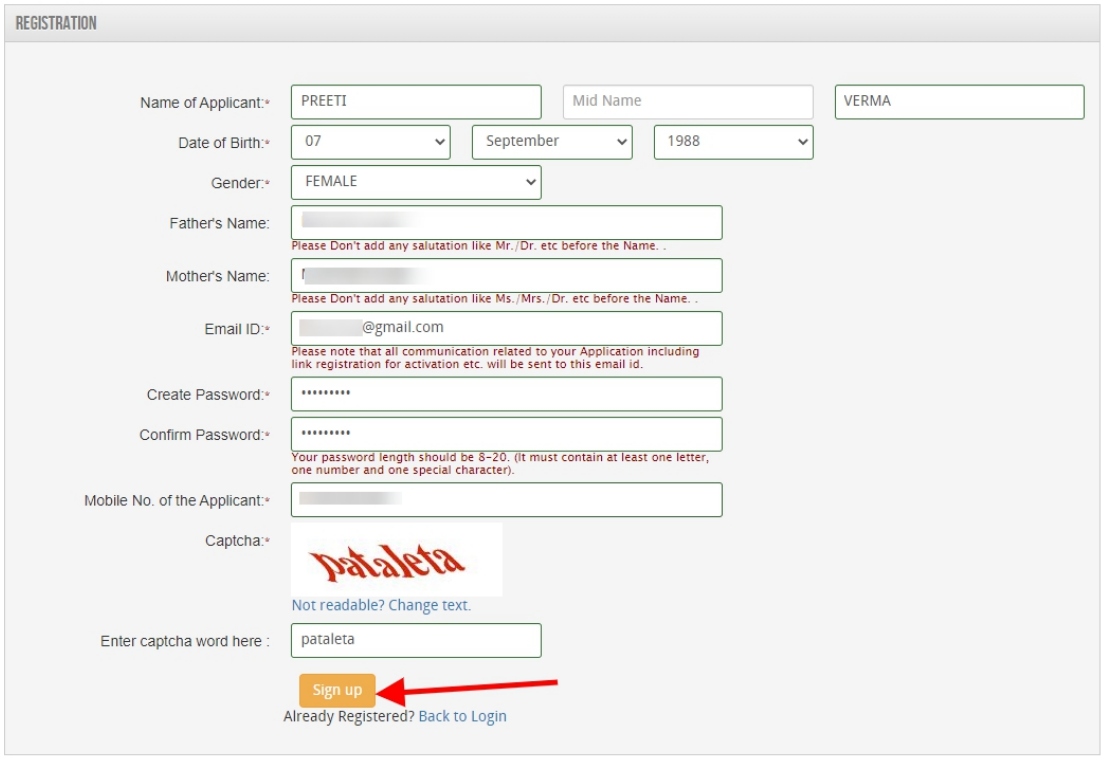
How to complete Registration on the North Eastern Regional Institute of Science and Technology (PG/Ph.D) Application Portal (www.neeonline.ac.in) for Online Application Process?

Step 1: Please click on **"Apply for Admission"** button given on the home page of the North Eastern Regional Institute of Science & Technology (NERIST), Nirjuli, Itanagar [PG/Ph.D] Application Portal - i.e., **www.neeonline.ac.in** or www.nerist.ac.in

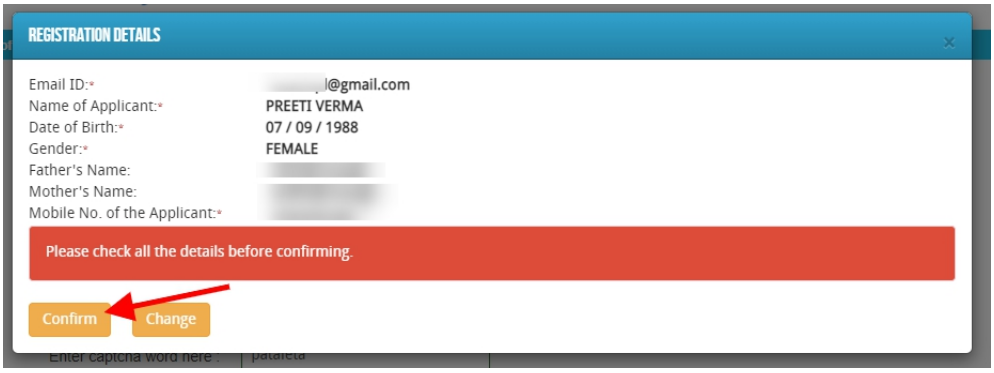
Step 2: On clicking the link, you will be directed to a new page having an Applicant Login Box. Below the login fields there is a link **"New Registration"**. Please click on this link.



Step 3: When you click the link you will be shown a Registration Form asking for various details. Fields for information which is mandatory is marked with "Red coloured bullets" and is to be essentially filled up. These fields cannot be left blank. Once you fill the details, you can click on the **"Sign up"** button at the bottom for completing the registration process.

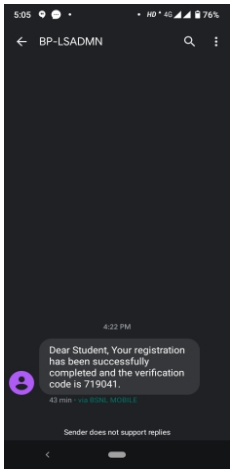


NOTE: PLEASE NOTE THAT DETAILS SUBMITTED DURING REGISTRATION CANNOT BE CHANGED LATER. SO MAKE SURE YOU DO NOT MAKE ERRORS IN THE INFORMATION YOU FILL IN THIS FORM.





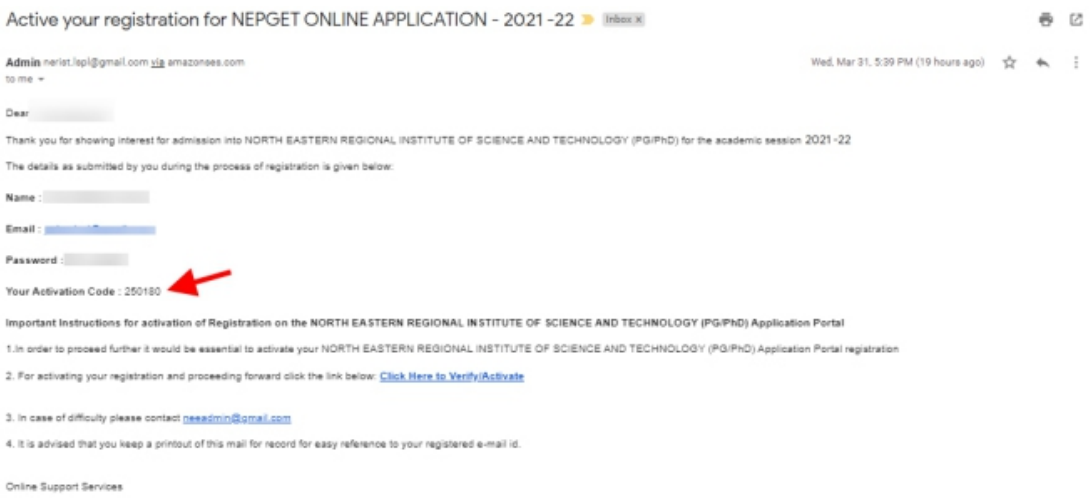
Step 4: Activation and Validation of Registration:



On successful submission of registration details, you would be shown a confirmation message on the screen. You will also **receive an e-mail** on the e-mail ID provided by you in the Registration Form and a validation code on your registered **mobile number**. This email will contain an **activation link**. You need to click on this activation link to confirm and complete your registration process.

Note: This confirmation and activation link e-mail might land up in your "Spam Folder" or "Junk Folder'. So, in case you do not find the registration confirmation e-mail in your "Inbox", please check your "Spam Folder" or "Junk Folder'. If you find the E-mail from ***infonee@nerist.ac.in*** in your "Spam Folder" or "Junk Folder', please report it as "Not Spam" and/or add the same to your contact list so that the subsequent e-mails from *infonee@nerist.ac.in* always come in your Inbox. Always check your "Spam Folder" or "Junk Folder' for e-mails from the North Eastern Regional Institute of Science & Technology (PG/PhD) Application Portal.

1. Click on this activation link received in the e-mail. Your account will not be activated until you have clicked on this activation link, so, *do not forget this important step.*


Active your registration for NEPGET ONLINE APPLICATION - 2021-22

Admin neriet.lepl@gmail.com via amazonses.com
to me

Wed, Mar 31, 5:39 PM (19 hours ago)

Dear

Thank you for showing interest for admission into NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY (PG/PhD) for the academic session 2021-22

The details as submitted by you during the process of registration is given below:

Name :

Email :

Password :

Your Activation Code : 250180

Important Instructions for activation of Registration on the NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY (PG/PhD) Application Portal

1.In order to proceed further it would be essential to activate your NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY (PG/PhD) Application Portal registration

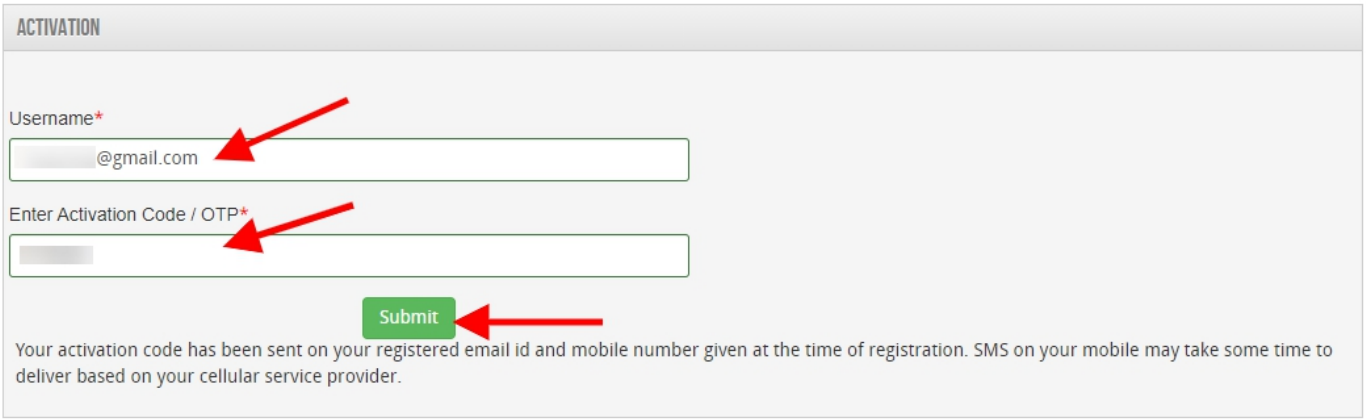
2. For activating your registration and proceeding forward click the link below: Click Here to Verify/Activate

3. In case of difficulty please contact neeadmin@gmail.com

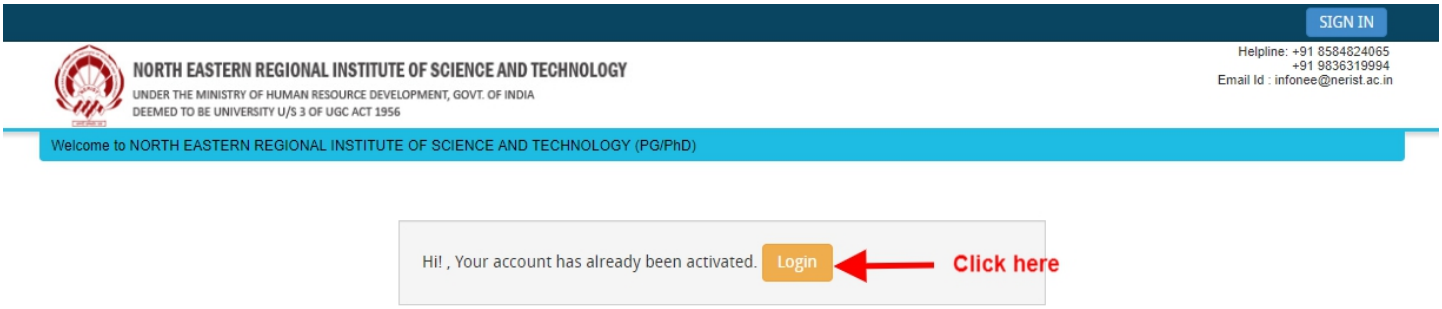
4. It is advised that you keep a printout of this mail for record for easy reference to your registered e-mail id.

Online Support Services

2. On clicking the activation link, you will be directed to the validation page in which you are required to give the validation code sent on your registered mobile number. Enter the validation code received on your registered mobile number to complete the registration process.

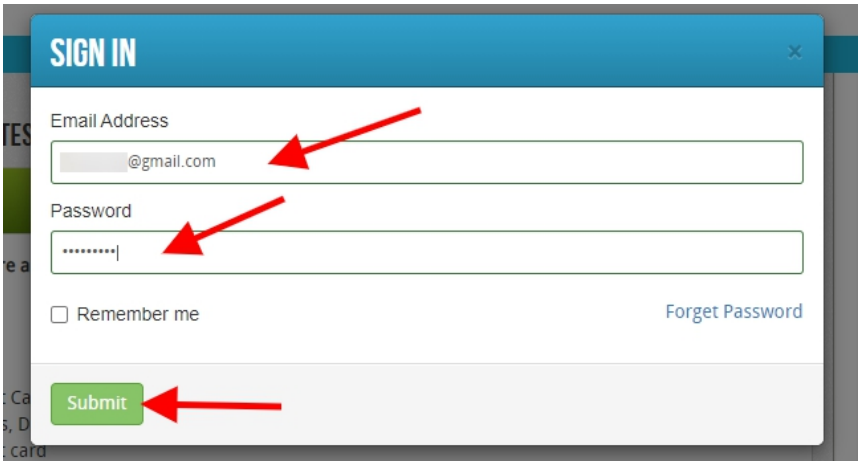


3. On successful validation, you will be allowed login and directed to My Application Section. Select the course of your choice and start filling up the application form online.

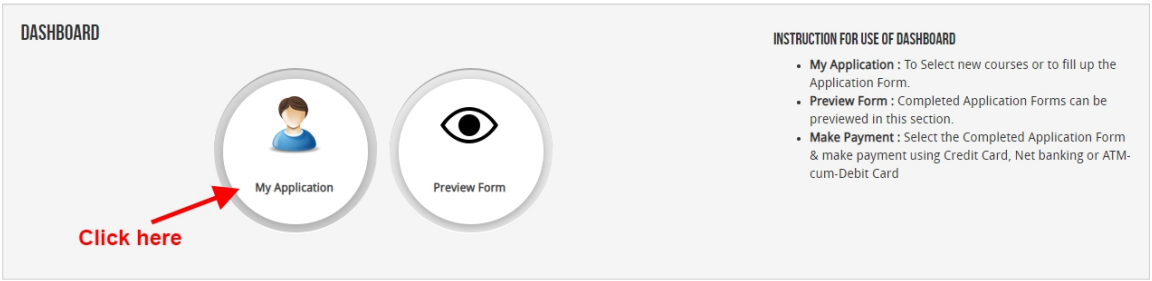


APPLICATION PROCESS:

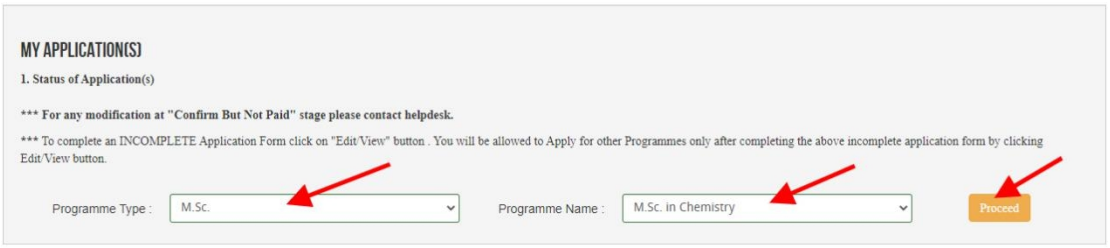
Step 1: After activation and validation of your Registration on the North Eastern Regional Institute of Science and Technology (PG/Ph.D.) Application Portal (**www.neeonline.ac.in**), you can login into the programme.



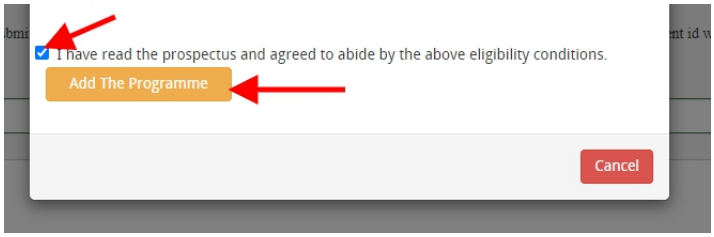
After login you will be able to see dashboard and click **"My Application"**



Then you will be able to see following page with the title **"Status of Applications"**.

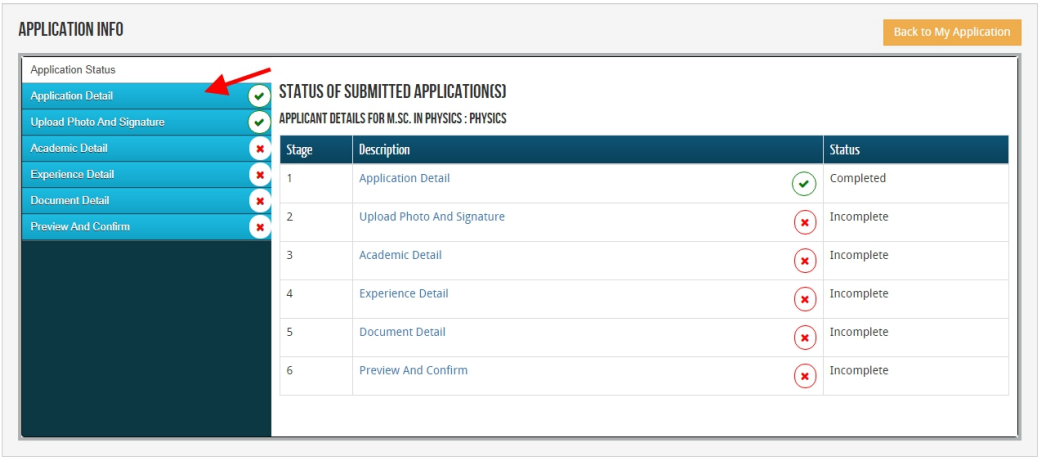


Step 2: Please select your programme type, school and preferable first programme from the drop down boxes given at the bottom. Check the eligibility and in case you are eligible for the course click the checkbox given below regarding confirmation of the terms and conditions and the eligibility to proceed further for filling up the application form by clicking **"Add Programme"** button.

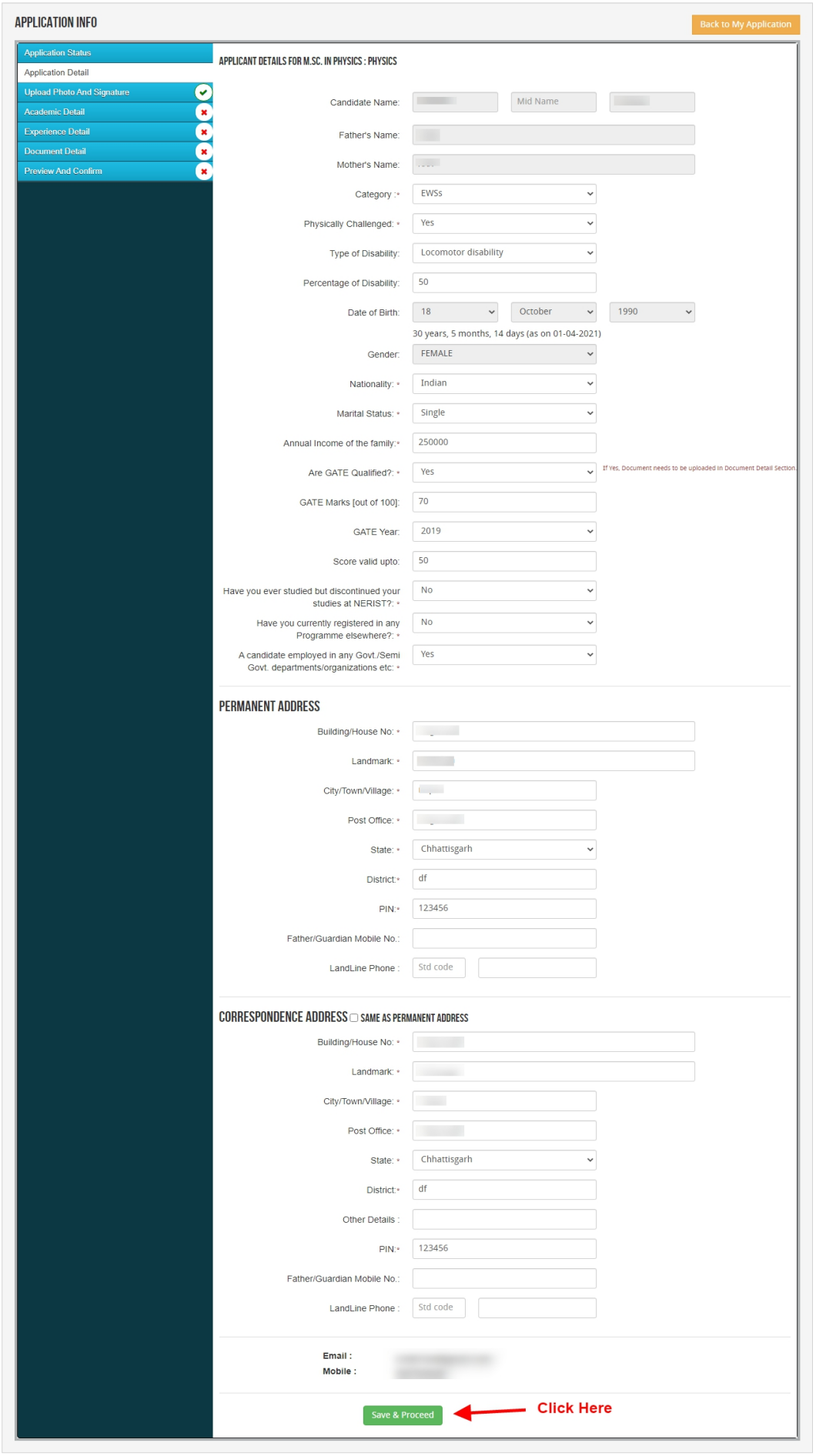


How to fill up the Application form after I have selected the Programme I wish to apply:

Step 1: After you have added the first programme of your choice and come to the above screen, On clicking, following form will appear on the screen. Some of its fields would be pre-filled with the details you gave at the time of registration. Fill up other required details correctly.



Note: Mandatory fields have been marked with red asterix. They are to be essentially filled up before you will be allowed to 'Save' of the form.


APPLICATION INFO
Back to My Application
Application Status
Application Detail
Upload Photo And Signature
Academic Detail
Experience Detail
Document Detail
Preview And Confirm
APPLICANT DETAILS FOR M.SC. IN PHYSICS : PHYSICS
Candidate Name:
Mid Name
Father's Name:
Mother's Name:
Category :*
EWSs
Physically Challenged: *
Yes
Type of Disability:
Locomotor disability
Percentage of Disability:
50
Date of Birth:
18
October
1990
30 years, 5 months, 14 days (as on 01-04-2021)
Gender:
FEMALE
Nationality: *
Indian
Marital Status: *
Single
Annual Income of the family:*
250000
Are GATE Qualified?: *
Yes
If Yes, Document needs to be uploaded in Document Detail Section.
GATE Marks [out of 100]:
70
GATE Year:
2019
Score valid upto:
50
Have you ever studied but discontinued your studies at NERIST?: *
No
Have you currently registered in any Programme elsewhere?: *
No
A candidate employed in any Govt./Semi Govt. departments/organizations etc: *
Yes
PERMANENT ADDRESS
Building/House No: *
Landmark: *
City/Town/Village: *
Post Office: *
State: *
Chhattisgarh
District:*
df
PIN:*
123456
Father/Guardian Mobile No.:
LandLine Phone :
Std code
CORRESPONDENCE ADDRESS
SAME AS PERMANENT ADDRESS
Building/House No: *
Landmark: *
City/Town/Village: *
Post Office: *
State: *
Chhattisgarh
District:*
df
Other Details :
PIN:*
123456
Father/Guardian Mobile No.:
LandLine Phone :
Std code
Email :
Mobile :
Save & Proceed
Click Here

Step 2: After you have filled up all the required fields of the **'Applicant Details'**, Click on the **'Save & Continue'** button given at the bottom of the page (as shown above).

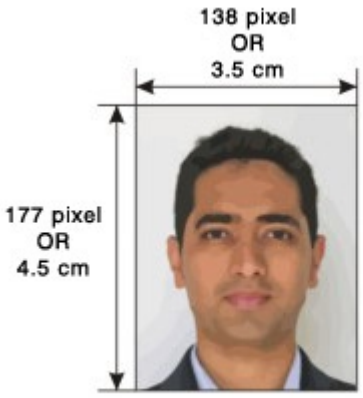
Note: For details related to specific fields in the application form, eligibility condition, number of seats, fee etc. please refer to the Information Bulletin available on the North Eastern Regional Institute of Science and Technology (PG/Ph.D.) Application Portal (www.neeonline.ac.in)

Step 3: After filling up application click the **'Save and Continue'** Button given at the bottom.

Photo & Signature upload:

Step 1: To upload the image file of you scanned passport size colour photograph and signature, click the button 'Upload Photograph and Signature' button available on the left panel. On clicking, you will see the following screen:

(Your **scanned passport photo should be** within 3.5 x 4.5 cm in size, scanning resolution should be within 100 dpi & file size should be less than 100 KB.)

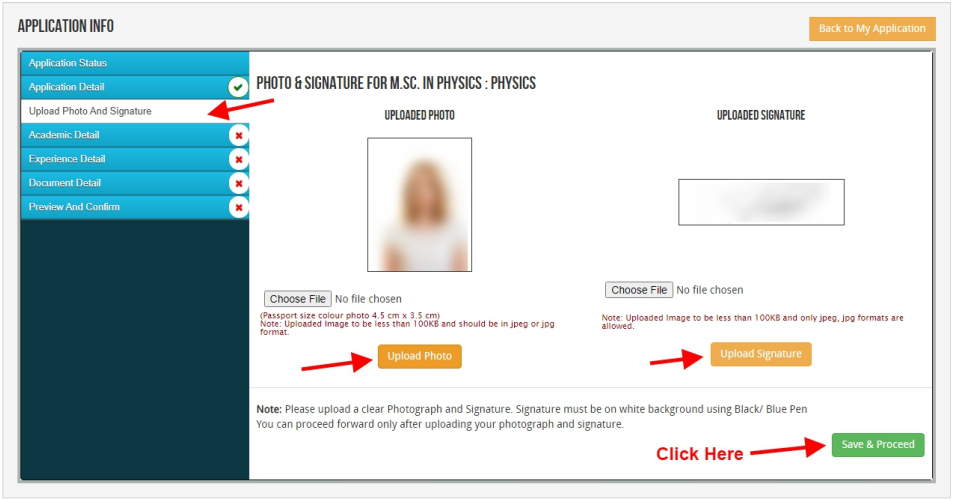


If you are facing any problem to upload your photo or rejected by the system then we are requested you to resize your photo as per the sample images shown here.
To Resize your scanned photo please follow the following steps:

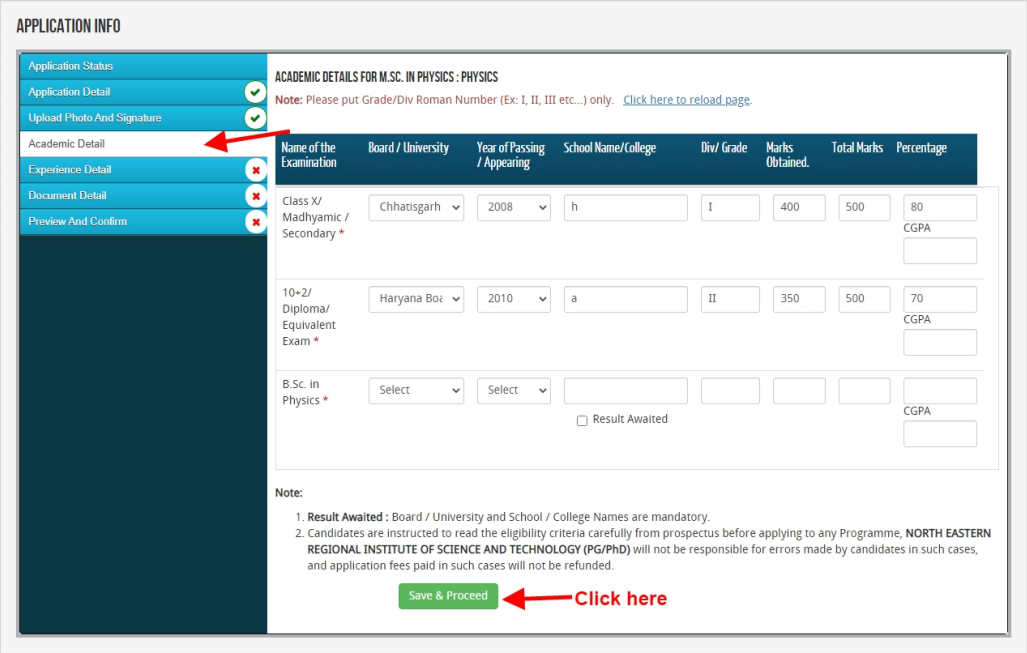
Right click on the scanned photo file → Open with → Microsoft Office Picture Manager
Then look at the top menus, Click Picture → Resize
Now look at the right panel, Select the radio button Custom width x height, and write width = 138px, height = 177px. Then Click OK to complete.
If you are not able to do this properly, then you can try 'Crop' feature for the 'Picture' menu

5. The save the file.

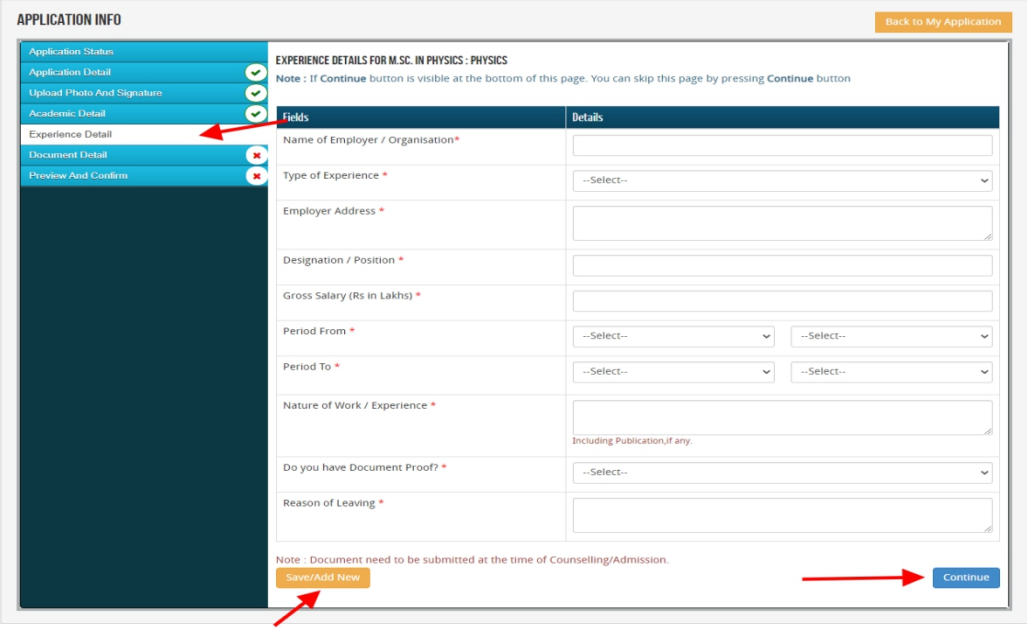
Step 4: Choose the image file (jpeg format; photo should be within 4.5 x 3.5 cm in size, scanning resolution should be within 100 dpi & file size not more than 100 kb) of your scanned passport size photograph and signature and click the button 'Upload Photo' and 'Upload Signature' button given below the Box. After you have successfully uploaded the photograph and signature, you will see the following page:



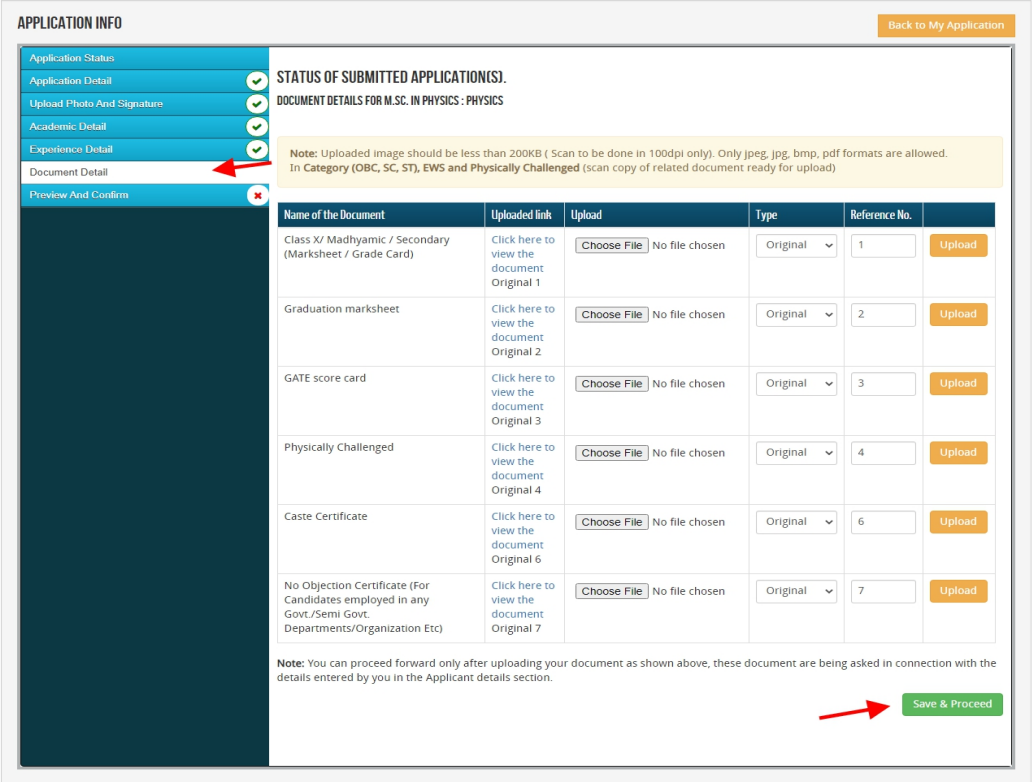
Step 5: After filling up application click the 'Save and Proceed' Button given at the bottom you have filled up all the required fields of the '**Academic Details**', here you add your passed examination details and Click on the 'Save' button.



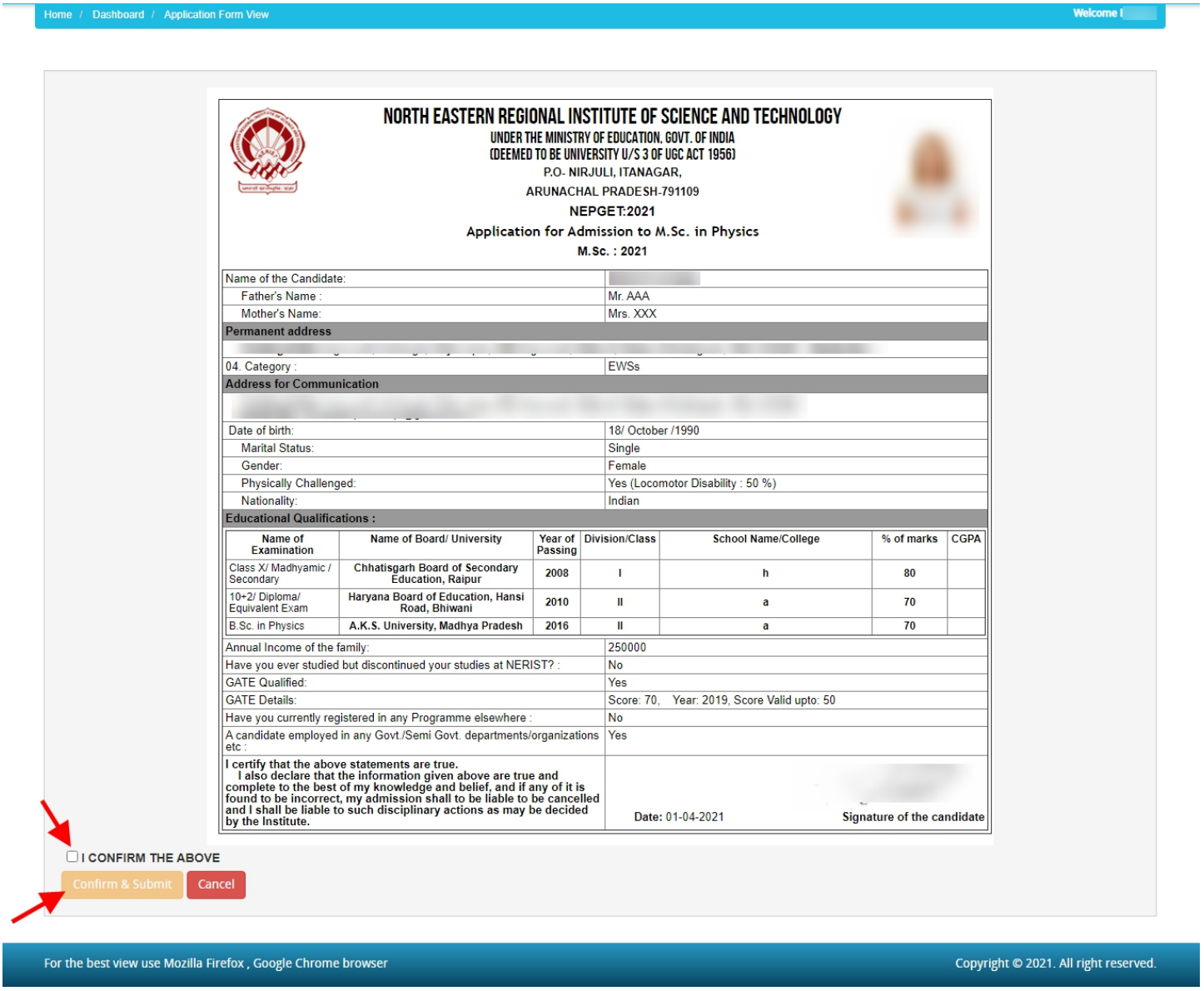
Step 6: In the next stage, the candidate has to choose the "**Experience Details**" and click on the 'Save & Continue' button.



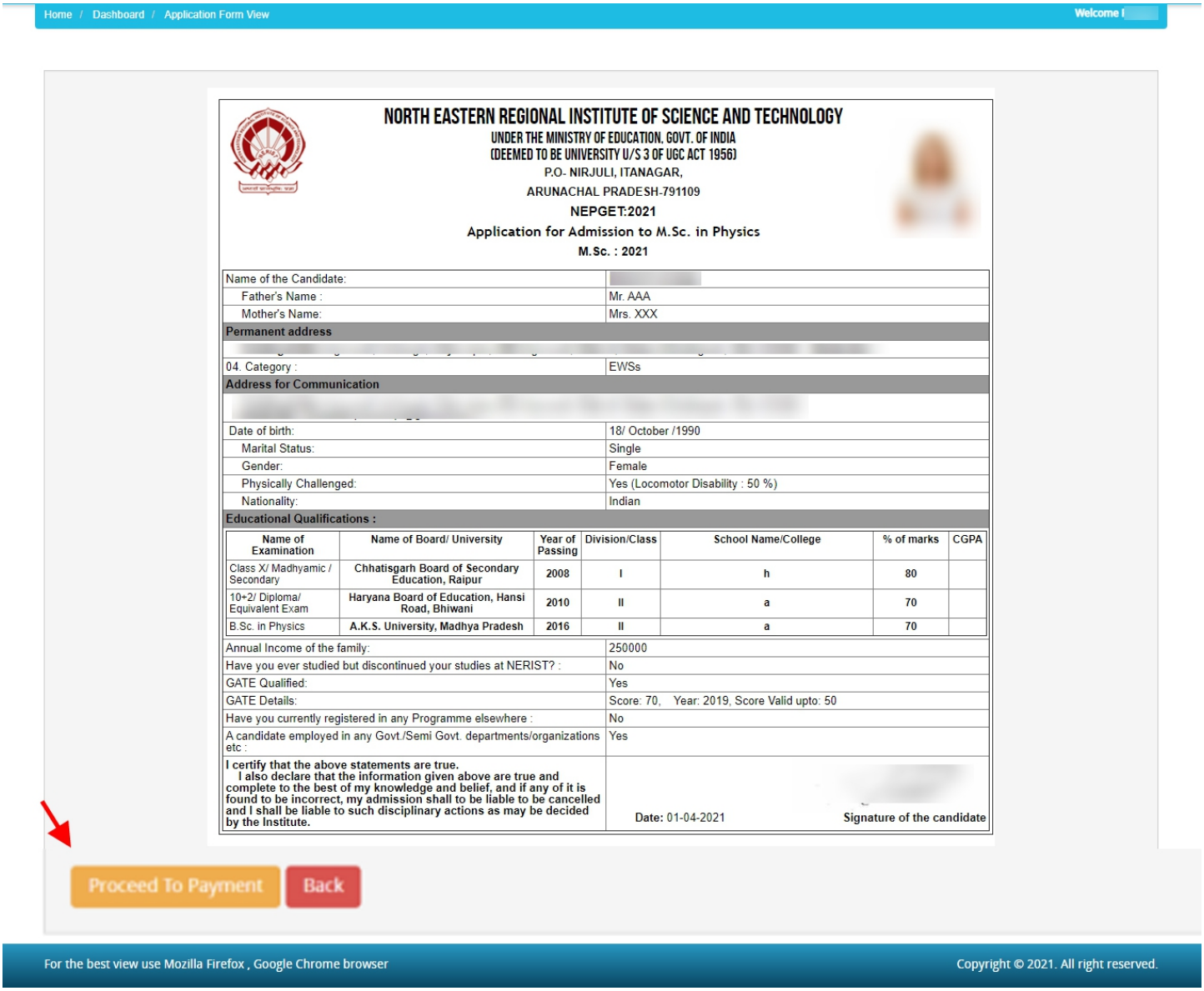
Step 7: In the next stage, the candidate has to choose the "**Document Details**" and click on the 'Save & Continue' button.



Once the applicant completes filling up all the above mentioned stages of the Application Form, the complete Application Form will be opened. In case he/she wants to edit some details, he/she can do so by clicking the '**Back**' button. To confirm the details entered, the candidate has to check the box and click on the **'Save & Continue'** button. **Once confirmed, it cannot be edited further.**



For the other subject system will go for **Applicant Form View** page. Here you can check all information which you have entered in your application process. If everything is ok then click the button **I CONFIRM THE ABOVE** & Click **'Confirm & Submit'** button.



After that system will show you the **Proceed to Payment** button to complete the payment and after a successful payment you can take the Print of the form.

Online Support Services
North Eastern Regional Institute of Science and Technology

10. Selection Procedure

Institute shall admit PG/Ph.D. students through an Entrance Test. Selection procedure is as follows:

A. Ph.D. admission

1. A candidate with valid GATE score/NET including JRF (UGC/CSIR/ICAR)/SLET/Lecturer fellowship and M.Phil. will be exempted from entrance examination for admission in Ph.D. However, written examination shall be conducted for all those candidates who are not exempted from this test.
2. There shall be 100 questions of one mark each in the admission test. There will be two sections in the question paper. Questions in **Section-A** will be from **Research Methodology (Annexure – VII)** of 50 marks and questions in **Section-B** will be respective subjects of 50 marks. Section A will be common for all Department.
3. A Single Question paper for written test will be prepared for each department.
4. The cut-off to qualify the test will be 50 marks including sections-A & B.
5. List of the candidates exempted from written test and qualified candidates in written test shall be provided by the admission Committee to the respective HoD/HoC.
6. Interview/viva-voce shall be conducted by the respective department. There shall be no marks on Interview/viva-voce. However, Department shall consider the following aspect:
    a. The candidate possesses the competence for the proposed research work.
    b. The research area can be suitably undertaken at the institute level.
    c. The proposed area of research can contribute to new/additional knowledge.
7. Final list of selected candidates will be provided by the Department to the Chairman PG and Ph.D. Admission Committee.

B. P.G Admission

1. A candidate with valid GATE score will be exempted from entrance examination for admission in M.Tech./ M.Sc.
2. Candidates appearing for MBA will have to appear in written test and Group Discussion/Personal Interview. CAT/MAT qualified candidates will be exempted from the written test only. Weightage for the written test and Group Discussion/Personal Interview will be 75% and 25%, respectively. Selection of provisionally selected candidates will be made on the basis of total marks. Candidates having valid CAT score will be given full weightage of allotted written test marks (100 marks). Candidates having valid MAT score will be given 80 marks (80% weightage). (***If a candidate with a valid MAT Score wants to appear in written test, the candidate will be allowed to appear in the examination. In this case, the written test score of the candidate will be considered in place of MAT score***). Group Discussion/Personal Interview shall be conducted in the Centre of Management Studies and marks will be submitted to the Chairman, PG and Ph.D. Admission Committee.
3. Written Test shall be conducted for the candidates who do not have valid GATE/CAT/MAT score for admission in M.Tech./M.Sc./MBA
4. There shall be 100 questions of one mark each in the written test.
5. There will be 25% negative marking for each incorrect answer.
6. List of provisionally selected/waitlisted candidates for all the Departments/Centre will be prepared by the Committee.

Candidates are required to download the Admit Card from the website and no separate letter will be sent for the written test/Interview/viva-voce.

The final selected list of the candidates will be displayed on Institute's Notice Board and the same will be available at Institute Website (http:// www.nerist.ac.in).

Any telephonic query in this regard may be made at the following numbers of NERIST EPBX: (0360) 2257401 to 11 Extn: 6436/6036/6008; Fax No. (0360) 2258533/2257470.

11. Admission

a) The selected and wait listed candidates will be required to report to the Academic Section of the Institute on the specified date for counselling/admission and Registration. The dates & time of **Counselling/admission and Course Registration of selected candidates of PG and Ph.D. and Wait listed candidates of M. Tech., M.Sc. & MBA shall be notified in due course of time.**

b) Candidates must produce all the certificates and mark sheets of all examinations in original for verification at the time of counselling/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 for 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 by 30th September, 2021, failing which he/she will not be eligible for registration in this Institute. **If the candidate fails to submit the requisite qualifying documents within specified time period, his/her registration from the 2nd semester will be discontinued/terminated.**

Important Note: Any deviation in documentary proof for the reservation code mentioned / chosen by an Applicant in his/her Application shall lead to summarily rejection of his/her candidature. Proof of eligibility against a reservation code, other than All India General category candidates, must be produced at the time of counselling/admission.

12. Hostel facility

Hostel accommodation to the students of Post Graduate and Ph.D. Programmes (FT) will be provided subject to the availability of hostel seats.

12.1 Ban on Picnic

Based on the past experiences of loss of precious lives of students while organizing picnic on river's side, the 13th Academic Council Meeting of the Institutes has resolved that picnics are banned with immediate effect.

13. Scholarship/Stipend for PG/Ph.D. students

The GATE qualified candidates admitted in M.Tech courses (AICTE approved courses) are eligible for Scholarship/Stipend as per the AICTE norms, and shall be required to apply to the AICTE portal after admission as an when the notification in this regard issued by AICTE. However, if the students leave the course midway, they are required to refund the entire amount of PG Scholarship drawn at the time of leaving the course in midway as per the guidelines of AICTE supported PG Scholarship scheme students. Institute may assign 8-10 hours of teaching load to every second year student receiving PG GATE fellowship. The PG students can also avail the scholarship facilities from the respective states. The various scholarship schemes are also to the students under National Scholarship Portal (NSP). However, irrespective of the source of scholarship/stipend, **a student must attend at least 75% of classes in each course in which he/she has registered, failing which the scholarship/stipend may be terminated. No Students can avail multiple scholarship/stipend from any other sources.**

There is a provision of limited scholarship for the Ph.D. (Full Time) scholar as per Institute norms and the Institute decision in this regard shall be treated as final.

13. Discipline for Admissions

13.1 M. Tech. Programme

Sl. No.	Name of the Course	Department	*Maximum intake
1	Farm Machinery & Power	Agricultural Engineering	22
2	Soil and Water Conservation Engineering	Agricultural Engineering	22
3	Environmental Science & Engineering	Civil Engineering	22
4	Geotechnical Engineering	Civil Engineering	22
5	Computer Science & Engineering	Computer Science & Engineering	22
6	Information Technology	Computer Science & Engineering	22
7	Power System Engineering	Electrical Engineering	22
8	Electronics and Communication Engineering	Electronics & Communication Engineering	22
9	Computer Integrated Manufacturing	Mechanical Engineering	22
10	Thermal and Fluid Engineering	Mechanical Engineering	22

***Subject to availability of the infrastructure of the Dept. the no. of seats may be vary.**

13.2 M.Sc. Programme

Sl. No.	Name of the Course	Department	*Maximum Intake
1	M.Sc. in Physics	Physics	22
2	M.Sc. in Chemistry	Chemistry	22
3	M.Sc. in Mathematics	Mathematics	22
4	M.Sc. in Forestry	Forestry	22

***Subject to availability of the infrastructure of the Dept. the no. of seats may be vary.**

13.3 MBA Programme

Sl. No.	Name of the Course	Department	*Maximum Intake
1	MBA (Full time)	Centre for Management Studies	38

***Subject to availability of the infrastructure of the Dept. the no. of seats may be vary.**

14. Assessment and award of grades

The Institute has 10 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:

Grade	Grade Point	Range of marks	Description
S	10	86-100	Excellent
A	9	76-85	Very Good
B	8	66-75	Good
C	7	56-65	Fair
D	6	46-55	Pass
F	0	45 & below 45	Fail
FA	0		Fail due to shortage of attendance
I	0		Incomplete

The performance of the student will be evaluated in terms of two indices: SGPA (Semester Grade Point Average) and CGPA (Cumulative Grade Point Average) for the Course, works.

The SGPA will be computed as under:

$$\text{SGPA} = \frac{\sum (\text{Course Credit x Grade Point})}{[\sum(\text{Course Credit})]}$$

The Cumulative Grade Point Average (CGPA) is computed likewise.

Conversion Formula

To assess the average performance of a student in a semester, the following conversion formula may be adopted.

For 6.00 ≤ SGPA/CGPA ≤ 10

% Marks = 10 X SGPA/CGPA – 5

NB: As per Academic Bye Laws 2.5.6, the registration of a student in PG programme shall be terminated for not obtaining a minimum GPA of 6.50 out of 10 in any semester.

15. 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, a Co-operative store, NERIST employees Thrift & Credit Co-operative Society, mini Cooperative Shop, Co-operative medical store, a Kendriya Vidyalaya (up to Class XII) and Kindergarten School There are also clubs for ladies, staff, officers 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 2500 lines.

16. Fees Structures

Candidates selected for admission shall be required to pay the prescribed amount of fee at the time of admission. Tentative fee structure is given below. However, fee structure may be revised/modified by the Institute.

Tentative Fee structure of Post Graduate and Ph.D. Programmes

Fees to be deposited to the Institute by online mode only.

Module		**1st year 1st Semester**		**2nd Semester onward**	
		GEN/OBC	**SC/ST/PWD/ NERISTIANS**	**GEN/OBC**	**SC/ST/PWD/ NERISTIANS**
MBA		Rs.32400/-	Rs.24340/-	Rs.19810/-	Rs.19750/-
M.Sc.		Rs.18680/-	Rs.16670/-	Rs.7720/-	Rs.5670/-
M. Tech.		Rs.21120/-	Rs.18700/-	Rs.8520/-	Rs.6110/-
Ph. D.	Full Time	Rs.25300/-	Rs.22880/-	Rs.7780/-	Rs.5360/-
	Part Time	Rs.21450/-	Rs.19030/-	Rs.5650/-	Rs.3250/-

N.B. 1. Excluding Late fee of Rs.1000/-

2. An amount of Rs. 200/- is to be paid every year in July for Group Insurance

Tentative Hostel fees are as follows:

1st year 1st Semester (For all Category)
Rs. **14800**/- as mess advance and Rs. **3000**/- as Mess Caution money.

17. Leave for M. Tech. and Ph.D. (Full Time)

As per Academic Bye-Laws (Master and Ph.D. Programmes) and other regulations from time to time.

18. Gymkhana

The Gymkhana is the centre of co-curricular activities of the students of NERIST. It provides facilities to them for their all-round development in the field of sports, culture, hobbies and creativity. All the activities of students are conducted under the control and guidance of the Chairman and a Vice-chairman who are faculty members of the Institute. The Gymkhana has a Sports Officer to look after the sports activities. The Sports Officer is assisted by other supporting staff.

Gymkhana has varieties of musical instruments and possesses necessary infrastructures like auditorium for cultural activities. These are looked after by Recreation and Creative Activity Forum (RACAF).

The Institute has a playground for football, cricket and athletics; an indoor stadium for badminton and table tennis; and courts for basketball, volleyball and lawn tennis for sports activity of students. Students can play indoor games like chess, carom, arm wrestling, boxing, tae-kwondo. NERIST also has a well-equipped multi-gym facility (16 stations). Separate facilities for badminton, basketball and table tennis are provided in the girls' hostel. Gymkhana also organizes various training programmes in different games. The NERIST sports Club organizes major games Hostel Block-wise and Annual Athletics Meet every year. Apart from these some memorial Trophies in football, Basketball & Volleyball are also organized by the NERIST Sports Club.

19. Training & Placement Cell

Right from its inception in 1991 the Training & Placement (T&P) Cell [renamed as Placement Cell] has been functioning actively in arranging Training and facilitating Placement and Carrier development opportunities to the students and also rendering valuable services in the counseling of students on continuous basis. Besides the above, the cell now extends its activities in the following areas:

- Industry-Institute Interaction activities
- Public Awareness and Relations
- Entrepreneurship Development Programme
- Student's Career Counseling
- Short Term Courses/Workshop to prepare Students for various Interviews
- Organizing mock-tests
- Arrange pool campus drives in nearby Cities

The Cell also organizes industrial training or field training for a period of 04 weeks for the Agricultural, Civil, Computer Science, Electrical, Electronics & Communication, Mechanical Engineering students, at the end of the pre-final year during Summer vacation, which is a compulsory requirement in partial fulfillment of the requirements of B.Tech. curriculum. Some of the organizations where NERIST students undertook their training during 2020 on On-line Mode are: (since, due to COVID-19, no Off-line Training could be arranged for the students); NELIET, CISCO, Internshala, Coding Element, Verzgo, Oil India Ltd., Google, CTTC, University of Michigan etc.

The Placement Cell also guides and helps the final year students in securing jobs commensurate with their knowledge and other achievements, by organizing campus interviews and exploring various avenues for their placement.

The Companies/PSU which conducted Pool Campus/Campus interviews during the last academic year are as under :-

GO SPEEDY GO, KIRLOSKAR BROTHERS, PIE-INFOCOM, INFOSYS,COGNIZANT, VEDANTA, OIL, AXIS BANK, BYJUS, HCL TECHNOLOGIES etc.

[Due to prevailing Covid-19, a few major companies could not turn up after confirming their visit]

The Cell also organizes regular workshops for pre-final and final year students. The basic objective of these workshops is to provide sufficient exposure to the students in the areas related to recruitment, selection and personality development, to facilitate their entry into leading and highly professional organizations. Such workshops provide information and guidance for preparing bio-data and better communication skills. It also provides necessary guidance for participating in group discussion and interview facing skills.

20. 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.

21. 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 Equipment, Digital Camera, LCD projector etc. A studio is under development, which currently takes up the indoor/outdoor recording of the Institute functions.

22. 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 having 16 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 carry out 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.

23. Institute Library

The Central Library which is the heart of the Institute was established in 1983. It provides one of the important academic services to the Institute. It is a well-equipped Library, centrally located with easy access, and does provide the right impetus for the intellectual growth of the students, teachers, research scholars & others around. The library has its own independent building of three floors with a carpet area of 3888 Sq. Meter. The library has a collection of over 63767 text and reference books and 37638 textbooks in its Book Bank. The library is subscribing to 104 Journals/Magazines and 10 National/Regional dailies to provide a base for enhanced learning. The Central Library with its modern collection of knowledge resources and innovative information services supports a complementary role for students, faculty, and the surrounding community in

their intellectual pursuits. The Library holds knowledge resources predominantly related to Science and Technology, Humanities and Social Science, Management, and other allied subjects. The whole library is covered with high-speed Wi-Fi/Internet facilities for its registered users.

The Institute is also a member of E-Sodh Sindhu (Formerly INDEST) Consortium, MHRD, Govt. Of India which provides access to e-resources (ASME, ASCE, Oxford University Journals, Web of Science. Besides this, it also subscribes journals and databases of JSTOR e-resources, Department of Biotechnology Sponsored DeLCON, Springer e-journals, Science Direct, ACM Journals for the user of the Institute. It possesses ISI Codes on CD-ROM and other educational DVDs. Being an institutional member of the Indian Liquid Crystal Society, Bangalore, and Kaziranga Wild Life Society of Assam, it receives literature and information services from them. The library is a registered member of the National Digital Library, Sponsored by MHRD, New Delhi Coordinate by IIT, Kharagpur.

Users can also access their required information books through OPAC (Online Public Access Catalogue).

24. Departments:

The Institute has 11 Academic Departments and one Centre. All the departments run PG and Ph.D. programmes except HSS, which offers only Ph. D. programme. Centre for Management Studies offers PG & Ph.D.

Departments

(1) Agricultural Engineering (A.E)
(2) Civil Engineering (C.E)
(3) Computer Science & Engineering (CSE)
(4) Electrical Engineering (E.E)
(5) Electronics & Communication Engineering (ECE)
(6) Mechanical Engineering (M.E)
(7) Forestry (F.O)
(8) Physics (PH)
(9) Chemistry (CH)
(10) Mathematics (MA)
(11) Humanities & Social Sciences (HSS)

Centre

(1) Centre for Management Studies (CMS)

Total seats available & Specialization/Area of research for Ph.D. admission 2021

Sl. No.	Department	* Total No. of seats available	Specialization/Area of Research available
1	Mathematics	6	Sampling Technique
			The Wavelet Transform
			Differential Equations, Water Waves, Linear Algera, Fluid Dynamic
2	Chemistry	7	Inorganic Chemistry
			Organic Chemistry
			Physical Chemistry
3	Forestry	3	Wild Life Biology, Conservation and animal Behaviour
			Ethnobotany and Agroforestry
			Forest Ecology & Biodiversity conservation, Carbon sequestration and climate mitigation
4	Agricultural Engineering	14	Stochastic Hydrology, Climatic Change and Watershed Management
			Ergonomics, Occupational health and safety, Farm Machinery and Power

			Rainfall-Runoff Modelling, Snow and Glacier Hydrology, Bio-diesel
			Application of RS & GIS in Water Resources, Operation and Management of Reservoir
			Evapotranspiration modelling and development of ArcGIS toolbar for prediction of irrigation requirement.
			Hydrological Modelling, Water Management ,Micro - Irrigation
5	Civil Engineering	14	Geotechnical Engineering, Numerical Modelling in Geotechnical Engineering
			Water Resources Engineering
			Building Science and Concrete Technology
			Environmental Engineering
			Earthquake Geotechnical Engineering
			Transportation & Traffic Engineering
6	Mechanical Engineering	32	Production Engineering/Metallurgy/ Composite
			Soft Computing , Modelling and optimization of Machining
			Modelling of additive manufacturing
			Thermal Engineering, IC Engine and Biomass Energy
			Design/Tribology/ Rotor dynamics
			CAD, Roboties, Mech. Vibrations
7	Electronics & Communication Engineering	20	Communication Engineering
			VLSI circuits & Semiconductor device
8	Electrical Engineering	38	Control Systems/ Electromagnetic fields and electrical circuits/Missile Technology/Illumination Engineering
			Microprocessor based Control & Instrumentation, Power System Reliability/ Digital System
			Electrical Machines/ Energy, Distributed Power Generations / Energy and Power quality
			Power system, High Voltage Electrical Machines & Drives
			Industrial Drives, Power Electronics & Energy Audit
			Power System Stability, FACTS & Renewable Energy, Rural Electrification
9	Computer Science Engineering	8	Mobile Crowd Sensening , IoT, Machine Learning,
			MANET / Cognitive Radio /Opportunistic Network
			Mobile Adhock Network, Wireless Sensor Network, Network Security
10	Centre for Management Studies	NIL	General Management
			Management Information System
			Marketing Management
			Human Resource Management
			Financial Management
11	Physics	21	Theoretical Plasma Physics
			Condensed Matter Physics(Theory)
			Microwave electronics, electromagnetic materials High Energy Physics Phenomenology.
			Mathematical Physics and Atmospheric Physics, Solid State Physics, Electronics
12	Humanities & Social Sciences	10	Communication Theory and New Media
			Organizational Behaviour, Industrial Psychology
			Human Resource Management

I. DEPARTMENT OF AGRICULTURAL ENGINEERING

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.

Besides UG, the department also runs two PG programmes viz.; M. Tech in Agricultural Engineering with specialization in Farm Machinery & Power and; M. Tech in Agricultural Engineering with specialization in Soil and Water Conservation. A good number of research scholars are enrolled under the department who are carrying out their research on various advanced topics related to the discipline of Agricultural Engineering.

Vision of the Department:

Create an educational environment in the discipline of agricultural engineering to develop technical manpower, researchers and entrepreneurs with commitment for learning enthusiasm, excellence, ethical behaviour and serving to the farmers and industry.

Mission of the Department:

1) Nurture global needs of sustainable food production through engineering interventions of farm mechanization and natural resource management.
2) Cater technical manpower to meet the needs of industry and society by providing research opportunities, quality education and industry institute interaction
3) Impart training, research, entrepreneurship abilities and skills to have all-round development of the students.
4) Disseminate appropriate agricultural technology to the farming community and industries.

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

S.No.	Name	Designation	Areas of Interest	No. of Ph.D. students currently guiding (Supervisor/Co-supervisor	No. of Vacancies for Ph.D. students
1.	Dr. S.K. Shrivastava Ph.D. (IIT, Roorkee)	Professor and Head	Stochastic Hydrology, Climatic Change and Watershed Management	03	05
2.	Dr. K.N. Dewangan Ph.D.(IIT, Kharagpur)	Professor	Ergonomics, Occupational health and safety, Farm Machinery and Power	03	05
3.	Dr. Aditi Bhadra, Ph.D. (IIT, Kharagpur)	Associate Professor	Rainfall-Runoff Modelling, Snow and Glacier Hydrology, Application of RS & GIS in Water Resources, Operation and Management of Reservoir-based Canal Irrigation Projects	2.5	01
4.	Dr. A. Bandyopadhyay Ph.D. (IIT, Kharagpur)	Associate Professor	Hydrological Modelling and Rainfall-Runoff Relationship, Evapotranspiration Modelling, Surface and Vadose Zone Hydrology, Hydro-informatics, Vulnerability to Climate Change	2.5	01
5.	Dr. P.K. Pandey Ph.D. (NERIST, Nirjuli)	Assistant Professor	Hydrological modelling, Micro irrigation, Water management	03	01
6.	Dr. T. Patel Ph.D.(IIT, Guwahati)	Assistant Professor	Farm machinery, Ergonomics, Bio-diesel	3.5	0.5
7.	Mr. M. Ukil Singh M. Tech. (IIT, Kharagpur)	Assistant Professor	Farm Implement/Equipment Design	-	-
8.	Mr. Anubhab Pal M. Tech. (IIT, Kharagpur)	Assistant Professor	Farm Machinery and Power	-	-
9.	Mrs. Vinita Pandey M. Tech. (MPUA&T, Udaipur)	Assistant Professor	Hydrological modelling, Micro irrigation, Watershed management and water harvesting	-	-
10.	Mr. Tage Tapang M. Tech. (NERIST, Nirjuli)	Assistant Professor	Farm Machinery and Power	-	-

Eligibility criteria of the scholar for Ph. D. programme as per UGC-Regulation-2016

Master degree in Engineering/Technology in Farm Machinery and Power/Soil and Water Conservation Engg./ Irrigation Water Management/ Water Resource Development and Management/ Irrigation and Drainage or equivalent with consistently good academic record and a minimum of 60% marks or equivalent CGPA with a valid GATE score. Candidates belonging to SC/ST and physically handicapped category will be given a relaxation of 5% marks or equivalent CGPA. In interview, candidate may be asked to present his/her proposed topic of research.

PG Programmes (Department will offer full time regular course only.)

M.Tech in Soil & Water Conservation:

(i) Eligibility Criteria: B.E./B.Tech/AMIE in Agricultural Engineering
(ii) Intake: 22 including EWS
(iii) Course Structure:

Year-I			
Semester – I			
Course Code	**Course Title**	**L – T – P**	**Credits**
SWC7101	Hydrologic Elements and Analysis	3 – 1 – 0	4
SWC7102	Irrigation System Design	3 – 0 – 2	4
SWC7103	Open Channel Hydraulics	3 – 1 – 0	4
SWC7104	Advanced Soil Conservation Measures	3 – 1 – 0	4
SWC70**	Elective I	3 – 0 – 0	3
SWC/MA/HS70*	Elective II	3 – 0 – 0	3
	Total		**22**
Semester - II			
Course Code	**Course Title**	**L – T – P**	**Credits**
SWC7201	Groundwater Hydrology	3 – 1 – 0	4
SWC7202	Design of Agricultural Drainage Systems	3 – 1 – 0	4
SWC7203	Water Resources System Analysis	3 – 1 – 0	4
SWC7204	Geo-informatics for Land and Water Management	2 – 0 – 4	4
SWC7251	Seminar	0 – 0 – 3	2
SWC70**	Elective III		3
SWC/HS70**	Elective IV		3
	Total		**24**
Year – II			
Semester – III			

Course Code	Course Title	L – T – P	Credits
SWC8199	Project (Part – I)	0 – 0 – 16	8
	Total		**08**

Semester – IV

Course Code	Course Title	L – T – P	Credits
SWC8299	Project (Part – II)	0 – 0 – 32	16
	Total		**16**
Grand Total			**70**

Elective – I and II

Course Code	Course Title	L – T - P	Credits
SWC7001	Application of Computer Programming in Soil and Water Engineering	1 – 0 – 4	3
SWC7002	Integrated Watershed Management and Modelling	3 – 0 – 0	3
SWC7003	Hydrological Modelling of Small Watersheds	3 – 0 – 0	3
SWC7004	Soil-Water-Plant Relationships	3 – 0 – 0	3
SWC7005	Pumping Systems	3 – 0 – 0	3
MA70**	Statistical Methods in Agriculture	2 – 1 – 0	3
HS7005	Project Management	3 – 0 – 0	3

Elective - III and IV

Course Code	Course Title	L – T - P	Credits
SWC7006	Stochastic Hydrology	3 – 0 – 0	3
SWC7007	Climate Change and Water Resources	3 – 0 – 0	3
SWC7008	Water Resources Planning and Management	3 – 0 – 0	3
SWC7009	Flow Through Porous Media	3 – 0 – 0	3
SWC7010	Advances in Crop Irrigation Management	3 – 0 – 0	3
HS7006	Human Resource Management	3 – 0 – 0	3
HS7002	Research Methodology	3 – 0 – 0	3

4.2 M. Tech. in Farm Machinery and Power

(i) Eligibility Criteria: B.E. / B. Tech. / AMIE in Agricultural Engineering
(ii) Intake: 22 including EWS
(iii) Course Structure

Year-I			
Semester-I			
Course code	**Course title**	**L – T – P**	**Credits**
FMP7101	Tractor System Design – I	3 – 1 – 0	4
FMP7102	Design of Farm Machinery	3 – 1 – 0	4
FMP7103	Soil Dynamics in Tillage and Traction	3 – 0 – 2	4
FMP7104	Principles of Ergonomics	3 – 0 – 2	4
FMP70**	Elective – I	3 – 0 – 0	3
MA/HSS70**	Elective – II	3 – 0 – 0	3
	Total		**22**
Semester-II			
Course code	**Course title**	**L – T – P**	**Credits**
FMP7201	Tractor System Design – II	3 – 1 – 0	4
FMP7202	Instrumentation for Agricultural Machines	2 – 1 – 2	4
FMP7203	Testing and Evaluation of Tractors and Farm Equipment	3 – 1 – 0	4
FMP7204	Alternative Sources of Energy	3 – 0 – 2	4
FMP7251	Seminar	0 – 0 – 3	2
FMP70**	Elective – III	3 – 0 – 0	3
HS70**	Elective – IV	3 – 0 – 0	3
	Total		**24**
Year-II			
Semester-I			
Course code	**Course title**	**L – T – P**	**Credits**
FMP8199	Project (Part – I)	0 – 0 – 16	8
	Total		**8**
Semester-II			
Course code	**Course title**	**L – T – P**	**Credits**
FMP8299	Project (Part – II)	0 – 0 – 32	16
	Total		**16**

Grand Total		**70**

Elective-I and II

Course code	Course title	L – T – P	Credits
FMP7001	Application of Programming in Farm Machinery Design and Management	2 – 0 – 2	3
FMP7002	Material Science and Engineering for Selection and Design of Farm Machines	3 – 0 – 0	3
FMP7003	Principles of Mechanization and Management	3 – 0 – 0	3
FMP7004	Mechanization in Tea Production	3 – 0 – 0	3
FMP7005	Safety and Health in Agriculture	3 – 0 – 0	3
MA70**	Statistical Methods in Agriculture	2 – 1 – 0	3
HS7005	Project Management	3 – 0 – 0	3

Elective-III and IV

Course code	Course title	L – T – P	Credits
FMP7006	Precision Agricultural Machinery	3 – 0 – 0	3
FMP7007	Bio-fuel Production and Application	3 – 0 – 0	3
FMP7008	Earth Moving Machinery	3 – 0 – 0	3
FMP7009	Computerized Design of Agricultural Machines	1 – 0 – 4	3
FMP7010	Industrial Safety	3 – 0 – 0	3
HS7006	Human Resource Management	3 – 0 – 0	3
HS7002	Research Methodology	3 – 0 – 0	3

4.3 Ph.D. (Agricultural Engineering) - Course Structure

Course Code	Course Title	L – T – P	Credits
AE9001	Computer Programming in Soil and Water Engineering	3 – 0 – 0	3
AE9002	Stochastic Modelling in Hydrology	3 – 0 – 0	3
AE9003	Soil and Water Systems Simulation and Modelling	3 – 0 – 0	3
AE9004	Application of RS and GIS in Natural Resources Management	3 – 0 – 0	3
AE9005	Water and Climate Change	3 – 0 – 0	3
AE9006	Design of Pressurized Irrigation Systems	3 – 0 – 0	3
AE9007	Modelling of Soil-Water-Plant Continuum	3 – 0 – 0	3
AE9008	Emerging Techniques in Watershed Management	3 – 0 – 0	3
AE9009	Optimization Techniques in Water Resources	3 – 0 – 0	3

AE9010	Research Methodology	3 – 0 – 0	3
AE9011	Computer Application in Agriculture	3 – 0 – 0	3
AE9012	Industrial Safety	3 – 0 – 0	3
AE9013	Material Science and Engineering	3 – 0 – 0	3
AE9014	Principles of Mechanization And Management	3 – 0 – 0	3
AE9015	Safety and Health in Agriculture	3 – 0 – 0	3
AE9016	Precision Agricultural Machinery	3 – 0 – 0	3
AE9017	Bio-Fuel Production and Application	3 – 0 – 0	3
AE9018	Instrumentation for Agricultural Application	3 – 0 – 0	3

Syllabus of Research Methodology:

Unit 1	Research: meaning, objective, significance; defining research problem; problems of research in India; review of the literature
Unit 2	Method of data collection: historical method, case study, observation, interview, questionnaire, experimental method; null and alternate hypothesis; design of experiments; errors in measurements
Unit 3	Analysis and interpretation of data: regression and correlation, ANOVA, T-test, chi-square test, principle component analysis; development of models and empirical equations using analytical methods and principles of similitude
Unit 4	Presentation of data; report writing: substance of report, format of report, basic concept of report writing
Unit 5	Ethical issues in research; impact factor, citation index, H-index

Books:

1 Research Methodology, C.R. Kothari, New Age Publications, New Delhi, 2004.
2 Research Methodology, B. Taylor, G. Sinha and T. Ghoshal, Prentice Hall of India, New Delhi, 2006.
3 Research Methodology, R. Panneersalvam, Prentice Hall of India, New Delhi, 2007.
4 Management Research Methodology, K.N. Krishnaswamy, A.I. Sivakumar and M. Mathirajan, Pearson Education, New Delhi, 2008.

Facilities in the Department

Major Instruments

Major Equipment (Costing ≥ Rs. 50,000/-) available in various laboratories of the department are as follows:

S. No.	Name	Make
1.	Automatic weather station	Pacific data systems P/ S ltd., Australia
2.	Tilting flume channel	S. D. Hardson, Kolkatta
3.	Fluidized bed drier	Lab. Equipment, Kolkatta
4.	Double beam spectrometer	Systronics

5.	Deep frezer	Remi
6.	Refrigerated centrifuge	Remi
7.	Laminar flow	LCT
8.	Moisture analyser	Sartorious
9.	Sound level meter	Lowon & Devis
10.	National power tiller and vertical reaper	National Power Tiller, Chennai
11.	Anthrometers and strength measurement setup	Sibar Flujner, Switzerland
12.	Oxylog	PK Morgan, England
13.	Bicycle Ergometer	Vinky
14.	Rotary cultivator	NIC,Kolkota
15.	Spring Dynamometer	Thermocon Industries, Kolkotta
16.	4 channel real time FFT analyser	AMIL LTd.
17.	Seat Pad Accelerometer	AMIL Ltd.
18.	Triaxial Accelerometer	AMIL Ltd.
19.	Working model of earth moving machine	Unique Agencies
20.	Diesel Smoke Meter	Testmaster
21.	FEL6 Demonstration Lysimter	M/S Edutech India Pvt. Ltd.
22.	Soil Moisture Extractor	S. D. Hardson, Kolkota
23.	Water Analyser	Systonics, Ahamedabad
24.	Drip Irrigation and its Parts	Premier Irrigation
25.	Pasta Making Machine	M/s La Monferrina, Italey
26.	Bry-Air Dehumidifier	Bry Air Asia Pvt. Ltd., Gurgaon
27.	Rice Sheller	M/s Osaw Industrial Products Pvt. Ltd.
28.	Seed Grader	M/s Osaw Industrial Products Pvt. Ltd.
29.	Laboratory Aspirator	M/s Osaw Industrial Products Pvt. Ltd.
30.	Seed Sieve Shaker	M/s Osaw Industrial Products Pvt. Ltd.
31.	Freeze Dryer	International Commercial Traders
32.	Humidity Cabinet	International Commercial Traders

33.	Spectrometer	Chemito Technologies
34.	Lactoscan Milk Analyser	General Sales Corporation, Kolkata
35.	LVDT III + Ultra Rehometer	M/s Platinum Communication, Kolkata
36.	Portable RH Measurement System	Mecord Systems and Service Pvt. Ltd., Mumbai
37.	Radar-based Digital Water Level Recorder	Virtual Electronics Company, Roorkee
38.	Oscilloscope Waveform Generator	Maverick Technologies, Assam
39.	Oscilloscope	Maverick Technologies, Assam
40.	Headspace Analyser	Scientific and Digital Systems, New Delhi

5.2 Departmental Library

Department has a full-fledged library with good number of books covering various areas of specialization of Agricultural Engineering; Manuals; Diploma and Degree project reports; PG and PhD theses; Training reports and other books and journals donated by the faculty members.

6.0 R&D/MODROB/Infrastructural Projects/Consultancy

Project Title	Project Duration	Amount Received (lakhs)	Funding Agency	Status	Faculty involved
All India Coordinated Research Project on Ergonomics and Safety in Agriculture	2004-2025	44	ICAR, New Delhi	In progress	02
Generation of anthropometric database of agricultural workers of north eastern region for the safe and efficient design of farm machinery	14.2.1999-13.2.2003	16	ICAR , New Delhi	Completed	01
Design and Economics and Utilization of Water Harvesting tank- A case study	16.4.2002 - 17.4.2005	4.4	BPIHED, Almora	Completed	02
Study on basic hydraulics and moisture movement of drip emitters	July 2003 - Sep 2004	0.5	NERIST	Completed	01
Land slide zonation of Dikrong river basin using RS and GIS	May 2003-Oct 2006	10	MHRD, New Delhi	Completed	01
Modernization of Bio- Chemical and Food Engineering Laboratory	April 2003 - Oct 2005	10	MHRD, New Delhi	Completed	01
Erosion hazard assessment using remote sensing and GIS techniques in a hilly catchment- a case study	April 2004 - March 2007	08	MHRD, New Delhi	Completed	01
Rural Technology Centre	1.4.2004 - 31.3.2006	40	KVIC, Mumbai	Completed	02
Documentation and improvement of traditional fermented food technologies of Arunachal Pradesh and to inventerise their microbial diversity	Dec 2004 - Dec 2007	5.85	DBT, New Delhi	Completed	01

All India Co-ordinated Research Project on Ergonomics and Safety in Agriculture (AIRP on ESA)	1.11.2004	52	ICAR, New Delhi	In progress	02
Modernization of Irrigation and Drainage Engineering Laboratory	April 2004 - March 2006	10	MHRD, New Delhi	Completed	01
Infrastructure facilities for certificate, diploma and B. Tech. course in Food Technology	May, 2004	50	Ministry of food Processing Industries	In progress	03
Identification of mechanization gaps and popularization of improved agri-horticultural implements for the rural development of Arunachal Pradesh	1.4.2005-31.3.2008	10	DST, New Delhi	Completed	01
Livelihood improvement and empowerment of rural poor through sustainable farming system in north –east India (NAIP)	Dec 2007 -Nov 2012	78	ICAR	Completed	01
Impact of climate change on snowmelt runoff contribution to eastern Himalayan Nuranang river	Sept 2010 - March 2014	42	DST	Completed	02
Modernization of Farm Machinery and Power Laboratory	8.3.2011 – 1.3.2012	8.05	AICTE	Completed	02
Vulnerability of North-East India to Climate Change for Hydrological Extremes of Floods and Droughts	Sept 2012 – March 2017	30.72	INCOH-MoWR	In progress	02
Consultancy work- To prepare evaluation report on sustainable development of the RHEP (NEEPCO)	Sept 2012 - March 2013	0.67	NEEPCO	Completed	02
Design and development of automatic safety device for longitudinal overturn of tractor during transport work	May 2013 - April 2016	24.12	DST	In progress	01
Development of Hydrological Module for Snowmelt Runoff in the Himalayan Region	Dec 2013 – March 2016	20.6	SAC, ISRO,	In progress	02
Measurement to Management (M2M): Improved Water Use Efficiency and Agricultural Productivity through Experimental Sensor Network	Oct 2015 – October 17	23.66	Ministry of Comm. and IT	In progress	02
Assessment of carbon stock and carbon sequestration potential of major landuse sectors in Arunachal Pradesh.	2015-18	84.624	DST, New Delhi	Completed	03
Biomass and carbon assessment in India- Phase II.	2015-18	14.00	NRSC, ISRO	Completed	02
Spatially distributed erosion estimation and hydrological modelling on a glaciated and ungauged river basin of Arunachal Pradesh using geo-informatics	2018-21	63.05	SERB, DST	In progress	02
Assessment of Variability in Glacier melt and Snow melt Runoff under Projected Climatic Scenarios for Data Scarce Himalayan River Basins	2019-22	69.4	DST	In progress	02
Assessment of natural spring reliability for rural water security in the lesser Himalayan region- Arunachal Pradesh.	2018-21	46.06	MoEF & CC through GBPIHE&SD, Almora	In progress	03
Response of selected natural resource in changing climate scenarios and its impact on socio-economy of Arunachal Himalaya: An indigenous and Technological Approach.	2019-22	58.07	DST, HICAB, New Delhi	In progress	01
Ergonomic Design and Performance Evaluation of Self-propelled Multipurpose Weeder Suitable to Northeast	2018-21	21.97	AICTE	In progress	01

Hilly Agriculture					
Effect of Climate Changes on Working Capacity and livelihood Sustainability for Agricultural Worker of Arunachal Pradesh	2019-22	58.46	DST	In progress	02

II. DEPARTMENT OF CIVIL ENGINEERING:

Vision of the Department:

"To become one of the best civil engineering departments in the country and produce professionals meeting the global standards with an innovative modular system of education and contribute to the socio-economic development of the nation."

Mission of the Department:

To produce professionals with sound technical knowledge and skills with competence in planning, analysis, design and implementation of infrastructural schemes in various areas of Civil Engineering.

To inculcate leadership qualities and communicative skills among the students along with moral and professional ethics to make them confident in providing innovative ideas in the fields of civil engineering and to cope up with the present and future needs of the private and public sectors.

To produce professionals having commitment and responsibility towards sustainable growth of the society.

To provide opportunity for co-curricular and extra-curricular activities for overall development of the individuals and motivation for lifelong learning.

Introduction and brief profile of the department:

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 students are admitted through the NERIST Entrance Examination (NEE-I, NEE-II, and NEE-III) every year. First entry at Base module is after Class X. Each module is terminal in character corresponding to an occupational level and at the same time those who satisfy the criteria for vertical mobility are allowed to move to the next higher module, leading finally to a degree in technology after six years span of time after entry at base level.

The Department also offers PG and research programmes. Currently two PG programmes are running, leading to M Tech degrees in (i) Environmental Science and Engineering (ESE), and (ii) Geotechnical Engineering (GTE).

Name of the HoD / HoC and faculty members with degree and the areas of specialization as per following format:

Name of the HoD : Prof. S. Mishra [e-mail: hodce@nerist.ac.in]

Faculty profile of the department:

Sl. No.	*Name*	*Qualification*	*Designation*	*Areas of Specialization*
1.	*Dr. S. K. Singh*	*Ph.D.*	*Professor*	*Geotechnical Engineering*
2.	*Dr. R. K. Prasad*	*Ph.D.*	*Professor*	*Water Resource Engineering*
3.	*Dr. S. Baishya*	*Ph.D.*	*Professor*	*Geotechnical & Earthquake Engineering*
4.	*Dr. S. Mishra*	*Ph.D.*	*Professor*	*Concrete Technology & Building Science*
5.	*Dr. Ajay Bharti*	*Ph.D.*	*Associate Professor*	*Environmental Engineering*
6.	*Dr. Dipika Devi*	*Ph.D.*	*Associate Professor*	*Geotechnical Engineering*
7.	*Shri S. K. Sahu*	*M.Tech.*	*Associate Professor*	*Hydraulics & Water Resource Engineering*
8.	*Dr. Mudo Puming*	*Ph.D.*	*Assistant Professor*	*Environmental Engineering*
9.	*Ms. Y. Bidyalaxmi Devi*	*M.Tech.*	*Assistant Professor*	*Environmental Engineering*
10.	*Mr. N. G. Sorum*	*M.Tech.*	*Assistant Professor*	*Transportation Engineering*
11.	*Dr Ajanta Kalita*	*Ph.D.*	*Assistant Professor*	*Geotechnical Engineering*
12.	*Ms. Yamem Tamut*	*M.Tech.*	*Assistant Professor*	*Transportation Engineering*
13.	*Dr. Dibyendu Pal*	*Ph.D.*	*Assistant Professor*	*Transportation Engineering*
14.	*Mr. K. James Singh*	*M.Tech.*	*Assistant Professor*	*Water Resource Engineering*

Name of PG (Full Time / Part Time) and Ph. D. Programmes (Full Time / Part Time), Eligibility Criteria, Course structures with course code Intake / Vacancies etc.

Name of PG Programmes :

(a) *M. Tech. in Environmental Science and Engineering (ESE):*

Eligibility criteria : *B. Tech. or Equivalent degree in Civil Engineering*

Intake : *22 nos.(including EWS)*

Course Structure:

Semester	*Course Code*	*Course Title*	*L - T - P - Cr.*
I	AS 7100	Environmental Bio-Technology	3 – 0 – 2 – 4
	ESE 7101	Physico-Chemical Treatment Processes	3 – 1 – 0 – 4
	ESE 7102	Biological Treatment Process	3 – 0 – 2 – 4
	MA7107	Advanced Mathematical Techniques	3 – 1 – 0 – 4
	CY 7100	Environmental Chemistry	4 – 0 – 0 – 4
		Semester Credits:	***20***
II	*ESE 7201*	*Solid Waste Management*	*3 – 1 – 0 - 4*
	*IDE/ESE 70 * **	*Elective I*	*3 – 1 – 0 - 4*
	*IDE/ESE 70 * **	*Elective II*	*3 – 1 – 0 - 4*
	*IDE/ESE 70 * **	*Elective III*	*3 – 1 – 0 - 4*
	*IDE/ESE 70 * **	*Elective IV*	*3 – 1 – 0 - 4*
		Semester Credits:	***20***
III	*ESE 8100*	*Seminar on Selected Topics of the Specialization*	*0 – 0 – 4 - 2*
	ESE 8099	*Project / Dissertation*	*0 – 0 – 16 - 8*
		Semester Credits:	***10***
IV	*ESE 8099*	*Project / Dissertation*	*0 – 0 – 32 - 16*
		Semester Credits:	***16***
		Grand total of programme Credits :	***66***

List of Electives

Course Code	*Course Title*	*L - T - P - Cr.*
ESE 7001	Advance Water and Wastewater Treatment	3 – 1 – 0 – 4
ESE 7002	Rural Water Supply and Sanitation	3 – 1 – 0 – 4
ESE 7003	Environmental Impact Assessments	3 – 1 – 0 – 4
ESE 7004	Unit Processes and Operations in Environmental Engg.	3 – 1 – 0 – 4
ESE 7005	Environmental Sanitation	3 – 1 – 0 – 4
ESE 7006	Surface Water Quality Modelling	3 – 1 – 0 – 4
ESE 7007	Water Distribution Networks	3 – 1 – 0 – 4
ESE 7008	Geo-Environmental Engineering	3 – 1 – 0 – 4
ESE 7009	Optimization Techniques in Water Resources	3 – 1 – 0 – 4
ESE 7010	Industrial Wastewater Treatment	3 – 1 – 0 – 4
ESE 7011	Design of Water and Wastewater Systems	3 – 1 – 0 – 4
IDE 7001	Energy System and Environment	3 – 1 – 0 – 4
IDE 7002	Hazardous Waste and Disaster Management	3 – 1 – 0 – 4
IDE 7003	Oil and Marine Pollution	3 – 1 – 0 – 4
IDE 7004	Air and Noise Pollution	3 – 1 – 0 – 4
IDE 7005	Waste Land Ecology	3 – 1 – 0 – 4
IDE 7006	Selected Topics in Environmental Engineering	3 – 1 – 0 – 4
IDE 7007	Environmental Systems Modelling	3 – 1 – 0 – 4
IDE 7008	Sustainable Technologies and Development	3 – 1 – 0 – 4
IDE 7009	Environmental Management	3 – 1 – 0 – 4
IDE 7010	Environmental Risk Assessment	3 – 1 – 0 – 4
IDE 7011	Future Studies	3 – 1 – 0 – 4
ESE 70**	Any Other Relevant Subject(s)	3 – 1 – 0 – 4
IDE 70**	Any Other Relevant Subject(s)	3 – 1 – 0 – 4

M. Tech in Geotechnical Engineering (GTE):

Eligibility criteria : B. Tech. or Equivalent degree in Civil Engineering

Intake : 22 nos (including EWS)

Course Structures:

Semester	***Course Code***	***Course Title***	***L - T - P - Cr.***
I	*MA 7107*	*Advanced Mathematical Techniques*	*3 – 1 – 0 – 4*
	GTE 7120	*Applied Geotechnical Engineering*	*3 – 1 – 0 – 4*
	GTE 7121	*Design of Shallow Foundation*	*3 – 1 – 0 – 4*
	GTE 7122	*Theory of Vibration*	*3 – 1 – 0 – 4*
	GTE 7123	*Geotechnical Exploration, Sampling & Testing*	*0 – 0 – 3 – 2*
	*GTE 70***	*Elective I*	*3 – 1 – 0 – 4*
		Semester Credits:	***22***
II	*GTE 7220*	*Deep Foundations*	*3 – 1 – 0 – 4*
	GTE 7221	*Numerical Methods in Geotechnical Engineering*	*3 – 1 – 0 – 4*
	*GTE 70***	*Elective II*	*3 – 1 – 0 – 4*
	*GTE 70 ***	*Elective III*	*3 – 1 – 0 – 4*
	*GTE 70 ***	*Elective IV*	*3 – 1 – 0 – 4*
		Semester Credits:	***20***
III	*GTE 8110*	*Seminar on Selected Topics of the Specialization (Audit)*	*0 – 0 – 4 - 2*
	GTE 8099	*Project / Dissertation*	*0 – 0 – 16 - 8*
		Semester Credits:	***10***
IV	*ESE 8099*	*Project / Dissertation*	*0 – 0 – 32 – 16*
		Semester Credits:	***16***
		Grand total of programme Credits:	***66***

List of Electives

Course Code	***Course Title***	***L - T - P - Cr.***
GTE 7001	*Rock Mechanics*	3 – 1 – 0 – 4
GTE 7002	*Critical State Soil Mechanics*	3 – 1 – 0 – 4
GTE 7003	*Ground Improvement Techniques*	3 – 1 – 0 – 4
GTE 7004	*Earthquake Geotechnical Engineering*	3 – 1 – 0 – 4
GTE 7005	*Optimization Techniques in Geotechnical Engineering*	3 – 1 – 0 – 4
GTE 7006	*Geo-environmental Engineering*	3 – 1 – 0 – 4
GTE 7007	*Pavement Design*	3 – 1 – 0 – 4
GTE 7008	*Ground Water Hydrology*	3 – 1 – 0 – 4
GTE 7009	*Finite Element Analysis*	3 – 1 – 0 – 4
GTE 7010	Soil Dynamics	3 – 1 – 0 – 4
GTE 7011	Machine Foundation	3 – 1 – 0 – 4

Ph.D. programme in Civil Engineering:

Eligibility criteria : As per UGC Regulation 2009

Ph.D. (Full Time & Part time): Master's Degree in Engineering/Technology with 60% marks in aggregate or CGPA 6.50 on a 10 point scale for General category. Candidate belonging to SC/ST and physically disabled category will be given a relaxation of 5% marks or equivalent CGPA.

Availability of Supervisors:

The following faculty members are eligible and available for supervision.

Sl. No	Name	Qualification	Designation	Areas of Specialization	No. of PhD students currently guiding (Supervisor/Co-supervisor)	No. of Vacancies for PhD students
1	Dr. R.K. Prasad	Ph. D.	Professor	Water Resources Engineering	3	2
2	Dr. S. Baishya	Ph. D.	Professor	Earthquake Geotechnical Engineering	2	2
3	Dr. S. Mishra	Ph. D.	Professor	*Concrete Technology & Building Science*	4	1
4	Dr. Ajay Bharti	Ph. D.	Associate Professor	Environmental Engineering	7	2
5	Dr. Dipika Devi	Ph. D.	Associate Professor	Geotechnical Engineering/Numerical Modelling in Geotechnical Engineering	4	2
6	Dr. Dibyendu Pal	Ph. D.	Assistant Professor	Transportation (Traffic) Engineering	3	2
7	Dr. Ajanta Kalita	Ph. D.	Assistant Professor	Geotechnical Engineering	3	1
8	Dr. Mudo Puming	Ph. D.	Assistant Professor	Environmental Engineering	Nil	2

5. Facilities available in the department:

The Department at present has the following laboratories with major equipment listed against each.

***Computer Lab**: Desktop Computer: 28 nos of Apple iMac, 6 nos. Dell (Vostro 360), 25 nos. Desktop Computer HP, HP Laserjet Printer 2014P, HP Scanner and UPS system with LAN Networking and Internet Connectivity.*

***Drawing and Drafting Section:** Drafting machine, Ammonia Printing machine, Tracing Table, N. C. scriber CS110, Lerroy Printing Set, LCD Projector, Xerox machine, Workstation Z 400 with Scanner and Printer, 6 nos. of Pentium IV computers, Over Head Projector, Spiral Binding machine, Lamination machine and 10 nos of 2280 desktop computers.*

Environmental Engineering Lab: Nephelo Turbidity Meter, Digital pH Meter, Conductivity Meter, Digital Spectro Photo Meter (340 nm to 960 nm), Hot Air Oven, Muffle Furnace, Water Bath, Auto Clave, Vacuum Pump, Vacuum Oven, Bacteriological Incubator, Analytical Balance (Cap-200g), Single Distillation Apparatus 10 ltr Capacity, Double Distillation Apparatus Capacity 5 ltr, Microprocessor Based Flame Photometer, Double Beam UV-VIS Recording Spectrophotometer, Centrifuge, Flock Test Apparatus, Vortex Shaker, Gas Cylinder with Regulator (H_2, N_2 and Air) 47 Ltr, Digital Microprocessor Based pH Meter, Soil and Water Analysis Kit (Digital), COD Digester (Thermoreactor) for Multiparameter Photometer, Portable NDIR (Non-disprersive infrared) Biogas Analyser, GPS Gramin, Multiparameter Meter, Turbidity Meter, pH Ion Meter with Ion Selective Electrode (ISE), High Volume Air Sampler, Chemical Dosing Pump with pH Controller, Heavy Metal Analyser (Pb, Cr and Hg) Detection rage ppt level, Digital Electronic Balances (Cap-500 gm and 2000 gm), Nitrogen Kjeldhal Digestion, Nitrogen Kjeldhal Distillation, Electronic Digital Thermometer with Penetration Probe (Range – 50.0 to 150.0^{0}C), Magnetic Stirrer with Hot Plate, Capacity 2 Ltr., Digital Laboratory Refrigerator, Stereoscopic Microscope, LED Flourimeter (LF-2) to measure Uranium in water (Range – 0.1 to 100 ppb)

.

Geotechnical Engineering Lab*: Triaxial Testing Machine for standard and large diameter samples (with constant pressure system), Consolidation Test Apparatus, Direct Shear Test Apparatus, Unconfined Compressive Test Apparatus, Vane Shear Test Apparatus, Permeameter, Proctor Test Apparatus, IS moulds and Rammer, Relative Density Test Apparatus, Swell Pressure Apparatus, Proctor Needle, Ovens, Index Properties Testing Apparatus, Augers and Samplers, Hydraulic jacks, Plate Load Test Apparatus, SPT Apparatus, Static Cone Penetration Test (SCPT) Apparatus, Automatic Compaction Test Apparatus, Soil Lathe, Soil Sample extractor, Large Direct Shear Test Apparatus, Digital Triaxial Test Apparatus.*

Highway Engineering Lab*: Ductility Testing machine with digital display, 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, Crushing value apparatus, Flow clips, Bitumen penetration kit, Traffic Signal system full scale (C Demorhation model), Hot air oven, Road unevenness indicator, Profile graph, Lutron make Anemometer, MEx Tech Hygrometer, Flakiness Index, Elongation Index, Water Bath Rectangular type, Automatic Compactor for Bitumen.*

Material Testing Lab: *Compression Testing Machine (Capacity 4000 kN), Flow Table, Slump cone, Vibrating Table, Needle Vibrator, Compaction Factor Apparatus, Vee-Bee Consistometer, Vicat Apparatus, Standard Cone Penetration, Tile Testing machine, Sieve Shaker, Universal Testing Machine 400 kN, Cube Mould (7x7x7 cm^3 and 15x15x15 cm^3), Cylinder Mould (10 cm x 20 cm), Briqutte Mould, Concrete Mixer, Beam Moulds, Counter Balance, Hot Air oven, Gillomere Needle, Vicat Apparatus with Consistency, Initial and Final Setting Attachment, Electronic Balance, Mortar Permeability Apparatus, Apparatus for Self Compacting Concrete (SCC):* J Ring, U-Box, L Box, V-Funnel, Flow Table, Compacting Cone, *Concrete Hammer,* PUNDIT PLUS, Resistivity Miter, GWD Permeability Kit, Moisture Measurement System, Rebar Locator (Profometer) with Universal Probe & Scanner, Porosity Tester (Vertical and Horizontal) with Vacuum Pump and Test Tubes, Crack Width Meter and Magnifier, Deformation Meter, Profile Grinder, Pull Off Tester, Grouting Pump.

Water Resources Engineering Lab: *Gravimetric Hydraulic Bench, Centre of Pressure Apparatus, Venturi meter, Orifice meter, Flow over Notches (Triangular and Rectangular notch), Pipe Friction Apparatus, Stability of a Floating Body Apparatus, Reynolds Number and Transitional Flow apparatus, 5m Open flow channel with accessories like Venturi Flume, Parshall Flume, Sluice Gate, Sharp-crested weir, Spillways and Radial Sector Gate, Jet Impact apparatus, Air-flow bench with accessories like Bernoulli's apparatus, Boundary layer, Drag and Lift, 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, Flow measurement Apparatus,* Natural Siphon Recording Rain

Gauge, Non Recording Rain Gauge, Open Pan Evapori Meter, Automatic Water Level Recorder, Self Recording Rain Gauge Rainfall Event Logger, GMS software- GMS v 9.0 + 5 License Network Hardware

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 Dumpy level, Plane table with Telescopic Alidade, Chains, Staves, Planimeter, Abney level,*

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

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 tools for masonry works.*

Softwares : Water shed modeling system –Version 8.2, Abacus, MaT Lab, Super Lingu-12.b, Many Open Source Softwares being used like Scilab, OpenSees, Salome-Meca, gmsh , Paraview etc.

Achievements of the department:

The department has hosted two national centers, namely STYA of PMGSY and FNDM of Ministry of Home in resent past. Presently the department is acting as the State Technical Agency of Public Health Engineering and Water Supply department, Arunachal Pradesh. The Department has undertaken several sponsored projects under MODROB and TAT, sponsored by the Ministry of Human Resource Development and DST, Govt. of India. There is one ongoing BRNS Project, Sponsored by Department of Atomic Energy (DAE), Govt. of India, entitled "Spatial distribution of Uranium and associated water quality parameter in western Arunachal Pradesh (eight districts)". Civil Engineering Department is actively contributing in the institute level DST sponsored Major R&D project entitled "Impact of Climate Change on Water Resources of Arunachal Pradesh". The Department has been taking many consultancy projects and detailed project (DPR) vetting. The department has organized several short term training programmes, executive training programme and conferences. The first batch of M. Tech in Geotechnical Engineering graduated in 2013, while twelve batches of M. Tech in Environmental Science and Engineering have been graduated so far. Faculty are contributing at state and national level academic activities like member in AICTE, APTEC, State Pollution Control Board, State level Environment Impact Assessment Authority, etc.

III. DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Introduction and brief profile of the department:

The Computer Science and Engineering Department of NERIST came into existence right at the inception of the institute in 1986. It offers a unique combination of courses and projects that helps the students to cope with the recent advancements in the computer industry and information technology. The department offers diploma and degree in computer science and engineering using a modular pattern.

M.Tech in Computer Science and Engineering started in 2006-2007.

M.Tech in Information Technology started in 2011-12.

The Ph.D programme started in 2007-2008.

The department offers regular courses like Computer Organization, Application Software, Operating System, Discrete Mathematics, Digital Electronics, Microprocessors, Database Management Systems, Compiler Design, Data Communications, Computer Networks, Design and Analysis of Algorithm 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, etc.

The faculty members of the department are involved in various inter-disciplinary research projects funded by agencies like DeitY, MHRD, AICTE, etc.

The department has well equipped LAN connected laboratories: System Lab-I, System Lab-II PC Lab-I, PC Lab-II, Microprocessor Lab, Hardware Lab, and Networking Lab with state-of-the art machines.

The department has 1GBPS leased line internet connectivity

Our graduates are well placed in organizations like, Infosys, SIEMENS, Tata Telecom, British Mahindra Telecom, DRDO, NICNET, ISRO, OIL, CSIR, Telecom, CMC, PCL, HCL, IDPL, IOC, SAIL. TELCO, TISCO, ESCORTS, Mindtree, Zaloni, Walmart, State Departments of Electronics, Power & PHED.

Name of HoD and faculty members with degree and areas of specialization:

Sl.No.	Name	Qualification	Designation	Area of specialization	No of current PhD scholar	No of vacancies for PhD
1	Dr.Moirangthem Marjit Singh	Ph.D. (University of Kalyani)	Asst. Prof. & Head	MANET, WSN, Network Security, ML.	02	02
2	Dr Ningrinla Marchang	Ph.D. (NERIST)	Assoc. Prof.	Mobile ad-hoc networks, Sensor networks, Cognitive Radio Network Security.	05	01
3	Dr.Satya Jyoti Borah	Ph.D (University of Delhi)	Assoc. Prof	Wireless Network, Opportunistic Network	01	05
4	Kapang Legoh	M.Tech (Rajiv Gandhi University)	Assoc. Prof	Speech Processing		

5	Margaret Kathing	M.Tech (NERIST)	Assoc. Prof.	Image Processing and Pattern Recognition		
6	Aswini Kumar Patra	M.Tech., (IIT Kharagpur)	Asst. Prof.	Evolutionary Computation, Data Mining, Complex Networks		
7	Dr Monjul Saikia	PhD (NERIST)	Asst. Prof.	Information Security, Network Security, Video and Image Processing		
8	Amar Taggu	M.Tech. (Jadavpur University)	Asst. Prof.	Cognitive Radio networks, Network Security, Machine Learning,IoT		
9	Pradeep Kamboj	M.Tech. (JRN Rajasthan University)]	Asst. Prof.	Vehicular Ad hoc Networks		
10	Ajit Kr. Singh Yadav	M.Tech. (U.P.T.U. Lucknow)	Asst. Prof	Internet of Things, Web Mining, Semantic Analysis, Sensor network		
11	Yogendra Mohan	M.Tech. (Panjab University)	Asst. Prof	Network Security		

Ph. D. in Computer Science and Engineering

Eligibility Criteria: Ph.D. (Full Time/Part Time) Candidates must have Master's Degree in Engineering/Technology with 60% marks in aggregate or CGPA 3.25 on 5.00-point scale. 5% marks relaxation will be given to SC/ST/PH category.

The admission to the Ph.D programme will be based on the performance in the written test and/or interview conducted. NET/GATE score is not essential. However, those with NET/GATE will be eligible for scholarship subject to availability of fund sanctioned by Govt. of India. Ph. D. Programme intake depends on the availability of supervisors and may change.

Availability of seats: 10

Name of the P.G. Programme(s):
M.Tech. in Computer Science and Engineering

M.Tech in Computer Science and Engineering commenced from 2006-2007 Academic session.

Eligibility Criteria

M.Tech.(CSE)

B. Tech. or equivalent degree in the respective Engineering/Technology discipline with a CGPA 3.25 on a 5.00-point scale or 60% marks in aggregate for general Category. Additional weightage will be given to candidates with GATE Score satisfying some minimum criteria. 5% marks relaxation will be given to SC/ST/PH category.

Candidates without GATE score may also apply.

Reservation: Seats will be reserved as per Govt. of India rules.

INTAKE : The current intake for M.Tech.CSE is 22 (including EWS).

M.TECH. IN COMPUTER SCIENCE AND ENGINEERING

Course Structure:

Year I						
Semester I						
			L	T	P	C
CS	7101	Algorithm Design and Analysis	3	0	2	4
CS	7102	High Performance Computer Architecture	3	1	0	4
CS	70xx	Elective I	3/3	1/0	0/2	4
CS	70xx	Elective II	3/3	1/0	0/2	4
CS/HS	70xx	Elective III	3	1	0	4
CS	7151	Seminar I	0	0	4	2
						22

Elective I, II and III {any three of the following courses}:

(i) CS 7001 Intelligent Systems.
(ii) CS 7002 Ubiquitous Computing,
(iii) CS 7003 Computational Complexity
(iv) CS 7004 Bioinformatics
(v) CS 7005 Artificial Intelligence
(vi) CS 7006 Fault Tolerant Systems
(vii) CS 7007 Computer Graphics
(viii) CS 7008 Advanced Compiler Construction
(ix) CS 7009 VLSI Design
(x) CS 7010 Object Oriented Systems
(xi) CS 7011 Advanced Software Engineering
(xii) CS 7012 Game theory

(xiii) CS 7013 Systems Biology
(xiv) HS 7001 Organizational Behavior

Year I						
Semester II						
			L	T	P	C
CS	7201	Computer Communication Networks	3	0	2	4
CS	7202	Advanced Operating Systems	3	0	2	4
CS	70xx	Elective IV	3/3	1/0	0/2	4
CS	70xx	Elective V	3/3	1/0	0/2	4
CS/HS	70xx	Elective VI	3/3	1/0	0/2	4
CS	7251	Computing Laboratory	0	0	8	4
						24

Elective IV, V and VI {any three of the following courses}:

(i) CS 7014 Distributed Systems
(ii) CS 7015 Advances in Database Management Systems
(iii) CS 7016 Advanced Image Processing
(iv) CS 7017 Advanced Graph Theory
(v) CS 7018 Real Time Systems
(vi) CS 7019 Embedded Systems
(vii) CS 7020 Cryptography
(viii) CS 7021 Data Warehousing and Data Mining
(ix) CS 7022 Information and system security
(x) CS 7023 Machine learning.
(xi) CS 7024 Computational Geometry
(xii) CS 7025 Simulation and Modelling
(xiii) CS 7026 Cognitive Radio Networks
(xiv) HS 7004 Marketing Management.

Year 2						
Semester I						
			L	T	P	C

CS	8197	Project Seminar I	0	0	4	2
CS	8198	Project Viva Voce I	0	0	4	2
CS	8199	Project Part Report	0	0	8	4
						8

Year 2						
Semester II						
			L	T	P	C
CS	8297	Project Seminar II	0	0	8	4
CS	8298	Project Viva Voce II	0	0	8	4
CS	8299	Project Thesis	0	0	16	8
						16

A total of 70 credits have to be completed to get the M.Tech(CSE). degree. At least one humanities course (HS 70xx) has to be taken as elective in either semester I or II.

(Note: Maximum of two humanities courses can be taken).

M.Tech. in Information Technology

M.Tech. (IT)

B. Tech. or equivalent degree in the respective Engineering/Technology discipline with a CGPA 3.25 on a 5.00-point scale or 60% marks in aggregate for general Category. Additional weightage will be given to candidates with GATE Score satisfying some minimum criteria. 5% marks relaxation will be given to SC/ST/PH category. Candidates without GATE score may also apply. Candidates with B.Tech. or equivalent degree in Computer Science & Engineering, Electronics & Communication Engineering and Electrical Engineering will also be considered for M.Tech.(IT).

Reservation: Seats will be reserved as per Govt. of India rules.

INTAKE : The current intake for M.Tech(IT) is 22.(including EWS)

Course Structure:

Year 1
Semester I

		L T P C
IT 7100	**ADVANCED COMPUTER ARCHITECTURE**	**3-1-0- 4**
IT 7101	**SOFTWARE ENGINEERING METHODOLOGIES**	**3-0-2- 4**

IT 7102	**ADVANCED DATA STRUCTURES**	**3-0-2- 4**
IT 7151	**SEMINAR**	**0-0-4- 2**
IT/CS xxxx	**Elective I**	**(3-0-2/3-1-0)- 4**
IT/CS xxxx	**Elective II**	**(3-0-2/3-1-0)- 4**

Elective I and II [Any two of the following courses]

- **i) IT 7001 NEURAL NETWORKS AND APPLICATIONS**
- **ii) IT 7002 MODELLING AND SIMULATION**
- **iii) IT 7006 ADVANCED SPEECH PROCESSING**
- **iv) IT 7007 INFORMATION THEORY AND CODING**
- **v) IT 7008 MULTIMEDIA SYSTEMS**
- **vi) CS 7002 UBIQUITOUS COMPUTING**
- **vii) CS 7004 BIOINFORMATICS**
- **viii) CS 7005 ARIFICIAL INTELLIGENCE**
- **ix) CS 7006 FAULT TOLERANT SYSTEMS**
- **x) CS 7007 COMPUTER GRAPHICS**

Year 1

Semester II

IT 7200	**ADVANCED DATABASE MANAGEMENT SYSTEMS**	**3-1-0- 4**
IT 7201	**ADVANCED COMPUTER NETWORKS**	**3-0-2-4**
IT 7202	**ADVANCED OPERATING SYSTEM**	**3-0-2- 4**
IT/CS/MA/HS xxxx	**Elective III**	**(3-0-2/3-1-0)- 4**
IT xxxx	**Elective IV**	**(3-0-2/3-1-0)- 4**

Elective III and IV [Any two of the following courses with the condition that a maximum of one elective can be chosen from outside the IT and CS courses)

- **i) IT 7003 PATTERN RECOGNITION AND APPLICATIONS**
- **ii) IT 7004 OPTIMIZATION TECHNIQUES**
- **iii) IT 7005 MANAGEMENT INFORMATION SYSTEM**
- **iv) IT 7009 RELIABILITY ENGINEERING**
- **v) IT 7010 CAD FOR VLSI DESIGN**
- **vi) CS 7014 DISTRIBUTED SYSTEMS**
- **vii) CS 7016 ADVANCED IMAGE PROCESSING**
- **viii) CS 7017 ADVANCED GRAPH THEORY**

ix) **CS 7019 EMBEDDED SYSTEMS**
x) **CS 7020 CRYPTOGRAPHY**
xi) **CS 7021 DATA WAREHOUSING AND DATA MINING**
xii) **CS 7022 INFORMATION AND SYSTEM SECURITY**
xiii) **HS 7003 HUMAN RESOURCES MANAGEMENT**
xiv) **HS 7004 MARKETING MANAGEMENT**
xv) **MA 7001 ADVANCED DISCRETE MATHEMATICS**

Year 2

Semester I

IT 8197	**Project Seminar-I**	**0-0-4-2**
IT 8198	**Project Viva voce I**	**0-0-4-2**
IT 8199	**Project Part I**	**0-0-8-4**

Year 2

Semester II

IT 8297	**Project Seminar II**	**0-0-8-4**
IT 8298	**Project Viva voce II**	**0-0-8-4**
IT 8299	**Project Thesis**	**0-0-16-8**

Total = 66 Credits

A total of 66 credits to be completed to get the M.Tech.(IT) degree

Facilities available in the Department :

LABORATORIES AND FACILITIES

PC Lab I

The practical classes of Diploma Module and Base Module are held in this laboratory. The students get exposure to various types of Application Software such as Visual Basic, C++, 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 i3 PCs Laserjet printers, Deskjet printers, Line Printers, etc.

PC Lab II

This is a newly setup lab where practical classes of Diploma Module and Base Module are held. The students get exposure to various types of Application Software such as Turbo C++, Dev C++, etc in this lab. High level language programming for the students of all the engineering departments of NERIST is given here. It is well equipped with i5 PC's

System Lab I

The Systems Laboratory - I is well equipped with servers and terminals basically for working in UNIX/LINUX and Windows environment as well. Practical classes for Diploma and Degree and PG students are held here. Hands on exposure to various programming Software such as C, C++, and RDBMS software like Oracle 9i and SQL Server, Visual Studio.NET, MATLAB2015R, NETSIM 9 are available in this lab. Several HCL Infinity Global Line Servers are connected to highend Intel i5 PC's. The lab also has Laserjet printers, Line matrix printer, Scanner etc. 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.

System Lab II

System laboratory II is well equipped with two HCL Infinity Global Line Servers running on Red Hat Linux 4.0 Enterprise Edition, a SUN ULTRA SPARC 10S SERVER, several HP Thin clients and Mac minis. This lab also has high end Intel i7 PCs. Practical classes for M.Tech and Degree students are held here.

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. Practical classes for Diploma and Degree students are held here. The lab is well equipped with Frequency counters, Oscilloscopes, Analog Multi-meters, Power supplies, 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.

Network Lab

This lab is equipped with PCs and LAN T (LAN Trainer kits) consisting LANT – NIU, LAN-T PS and LANT Software. It also has ISECURIT - a Network and Data Security Training System and QUALNET 5.0 . M.Tech and B.Tech lab assignments on Computer Communication and Networking are carried out in this lab. It is augmented with a wireless network testbed of 5 USRPs and related accessories.

Seminar Hall

Faculty members and the students of the department use the seminar hall for exchange of ideas and information through presentations and discussions. The Diploma, Degree and MTech Final year project seminars are conducted here. Other presentations such as PhD progressive seminars are also conducted 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 well equipped with a smart classroom.

Departmental Library

The department has a departmental library that will cater to the needs of students, faculty and staff of the department. Presently, the library has 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.

IV. DEPARTMENT OF ELECTRICAL ENGINEERING

Introduction

The Department of Electrical Engineering has been playing a pivotal role in producing scientists and technologists of the highest calibre ever since the institute was established. The first batch of students graduated in 1992. The Department follow offers the following undergraduate programmes namely, Base module, Diploma module and Degree module. The students for each module are admitted through NERIST Entrance Examination namely, NEE-I, NEE-II. The Department is also offering Postgraduate (M. Tech.) programmes with a specialization in Power System Engineering and Ph. D. programmes to cater to the ever challenging needs of technical excellence in all areas of Electrical Engineering. The Department has distinguished faculty members having Ph. D./M. Tech. degrees from renowned institutes in India. The infrastructure and laboratory facilities are upgraded from time to time and provide adequate opportunities for students and researchers to learn and innovate. The Department also undertakes many research projects sponsored by the government as well as industry.

Mission of the Department

M1. Impart quality education to produce globally competent electrical engineers capable of extending technological services.
M2. Engage in research and development in cutting edge and sustainable technologies.
M3. Nurture scientific temperament, professional ethics and industrial collaborations.

Vision of the Department

To evolve as a centre of excellence to train students in cutting edge technologies to meet the needs of global industry and to develop them into skilled electrical engineers and inculcate them with human values and professional ethics.

1. Faculty Profile

Sl. No.	Name	Designation	Area (s) of specialization	No. of Ph.D. Students currently guiding (Supervisor/ Co-Supervisor	No. of vacancies for Ph.D. students
1.	Dr. S. K. Bhagat Ph.D. (IIT, Varanasi)	Professor & Head	Control Systems, Electromagnetic Fields & Electrical Circuits	3	5
2.	Dr. O. P. Roy Ph.D. (IIT, Dhanbad)	Professor	Microprocessor based Control, Power System Reliability	4	4
3.	Dr. Saibal Chatterjee Ph. D. (JU, Jadavpur)	Professor (on lien)	High Voltage Engineering, Electrical Power System	-	-
4.	Dr. Sarsing Gao Ph. D. (IIT, Delhi)	Professor	Distributed Power Generations, Electrical Machines, Energy and	4	4

			Power Quality		
5.	Dr. R. K. Mehta Ph. D. (JU, Jadavpur)	Professor	Control Systems, Missile Technology	4	4
6.	Dr. A. K. Singh Ph. D. (TU, Tezpur)	Professor	Power System, Electrical Machines & Drives	2	6
7.	Mr. R. Blange (Pursuing Ph.D., from IIT Guwahati)	Associate Professor	Control Systems, Energy, Electrical Machines & Drives		
8.	Mr. T. V. P. Singh M.Tech (MNNIT, Allahabad)	Associate Professor	Control Systems, VLSI Design		
9.	Dr. Adikanda Parida Ph. D. (JU, Jadavpur)	Assistant Professor	Industrial Drives, Power Electronics, Renewable Energy, Rural Electrification	1	3
10.	Dr. M. Deben Singh, Ph.D. (NERIST,Nirjuli)	Assistant Professor	Power Electronics, Digital Systems	0	4
11.	Dr. Anu . Das Ph.D. (NERIST, Nirjuli)	Assistant Professor	Power System Stability, High Voltage	2	2
12.	Mr. N. L.Meitei (Pursuing Ph.D., from NERIST,Nirjuli)	Assistant Professor	Energy Management		
13.	Ms. Somila Hashunao (Pursuing Ph.D., from NERIST,Nirjuli)	Assistant Professor	Electrical Power System Management		
14.	Mr. Akhilsh Sharma (Pursuing Ph.D., from NERIST, Nirjuli)	Assistant Professor	Power Electronics and Drives		
15.	Dr. Piyali Das Ph.D. (NERIST, Nirjuli)	Assistant Professor	Illumination Engineering, Control System	0	4
16.	Mr. P. Devchandra Singh (Pursuing Ph.D., from NERIST,Nirjuli)	Assistant Professor	Power System Engineering		

M.Tech. and Ph.D. Program

With the aim of providing sound knowledge and cutting edge technology in the areas of Electrical Engineering, the Department offers:

(a) M. Tech. in Power System Engineering
Eligibility Criteria: B. Tech./B. E. in Electrical Engineering/Electrical & Electronics Engineering/Electronics & Communication Engineering. Other requirements as per institute norms.

(b) Ph. D. in Electrical Engineering
Eligibility Criteria: M. Tech./M. E. in Power System, Energy, Renewable Energy, Control and Instrumentation, High Voltage Engineering, Power Electronics, Machines and Drives.

(c) Name of PG Programme Running in the Electrical Engineering Department.

S.N.	Name of the Program	Department	Intake
1.	M. Tech in Power System Engineering	Electrical Engineering	22

Course Structure

Semester	Course Code	Course Title	Credits L T P Cr
Semester-I	EE7101	AC Power Transmission Systems	3-1-0 4
	EE7102	Renewable Power Generation Technologies	3-0-0 3
	EE7103	Power System Modelling and Control	3-1-2 5
	EE7104	HVDC Transmission System	3-1-0 4
	EE7105	Advanced Switchgear and Protection	3-1-0 4
	EE7106	Smart Grid Technologies	3-1-0 4
		Total Credit	24
Semester-II	EE7201	Soft Computing Techniques in Power System	3-0-2 4
	EE7202	Power System Instrumentation	3-0-2 4
	EE7203	Economic Operation of Power System	3-1-0 4
	EE70*	Elective-I	3-1-2 4
	EE70**	Elective-II	3-0-0 3
		Total Credit	19
Semester-III	EE8090	Minor Project/Seminar	0-0-16 8
	EE8199	Pre-submission and Defence Dissertation (Dissertation to continue)	0-0-4 2
		Total Credit	10
Semester-IV	EE8299	Dissertation (to be completed) Post-submission and Defence Dissertation	0-0-28 14
		Total Credit	14

Elective I & Elective II

Sl. No.	Course Code	Course Title	L	T	P	C
		Elective –I*				
1	EE-7001	Instrumentation and Control	3	0	2	4
2	EE-7002	Optimal Control Systems	3	1	0	4
3	EE-7003	Reliability Engineering	3	1	0	4
4	EE-7004	High Voltage and Insulation Engineering	3	0	2	4
5	EE-7005	Power System Reliability	3	0	2	4
6	EE-7006	Artificial Intelligence Application in Power System	3	0	2	4
7	EE-7007	Advanced Microprocessor & Applications	3	0	2	4
		Elective –II**				
1	EE-7011	Modelling and Analysis of Electrical Machines	3	0	0	3
2	EE-7012	Power Quality	3	0	0	3
3	EE-7013	Condition Monitoring of High Voltage Equipment	3	0	0	3
4	EE-7014	High Voltage Equipment	3	0	0	3
5	EE-7015	Power System Protection	3	0	0	3
6	EE-7016	Power Electronic Drives	3	0	0	3
7	EE-7017	System Theory	3	0	0	3

Activities

The Department of Electrical Engineering works under three main research groups namely, (i) Electrical Power and Energy Systems, (ii) Control and Instrumentation, and (iii) Electrical Machine Drives and Power Electronics. Apart from imparting engineering education at undergraduate and postgraduate levels, the Department undertake consultancy and other forms of collaborative work with various organizations. Several sponsored research projects have been accomplished and many are going on as part of the Department's continued effort towards institute-industry interaction. The Department organizes conferences, workshops, seminars and symposia regularly in various specialized areas of Electrical Engineering with the participation of faculty members and professional engineers from all over the country. The faculty members and students have published a large number of research papers in national/international journals and conferences.

Facilities

The Department has 13 well-equipped laboratories and a library to facilitate students and faculty members to access books and journals/periodicals which are indispensable for Electrical Engineering professionals. Keeping pace with ever-growing technological advancement, the Department has several PC servers and workstations hosting several software packages and linked through a local area network (LAN). Uninterrupted internet connectivity is available for the students and faculty members. A Smart Classroom is developed in the Department. The Labs are equipped with COMSOL Multiphysics, PSSE, PSCAD, MATLAB and Dig Silent software.

Laboratories

The theoretical knowledge imparted to the students is further supplemented by the practical classes. Some of the equipment and software available in the various laboratories are detailed as under:

Power System Lab

Power System lab is equipped with Distribution Line Simulator, PC controlled Power Analyser, Oil test set, Different types of Electromagnetic and Static Relays, Dielectric Purification Plant, Analog Oscilloscope, Digital Storage Oscilloscope, 3-phase Variable Inductor, 1-phase and 3-phase Loading Rheostats, Digital Clamp or

Power meters, LCR-Q meter, 3-phase Capacitor Bank, Capacitance and Tan Delta Test Set, Circuit Breaker Analyser, Liquid Dielectric Purification Plant.

High Voltage Engineering Lab

This lab houses the latest 100 kV AC/145 kV DC Dielectric Test Set & 300 kV, 7.5 kJ, 1.2/50 microsecond Impulse Test Set, Measuring Sphere Gap MF-100, Electronic Sphere EZK, 2-Channel, 200MHz Digital Storage Oscilloscope with software for direct transfer of data from Oscilloscope to PC.

Electrical Machine Lab

Electrical machine lab has wide range of motors and generators including DC Compound Motor, DC Compound Generator, 3-phase Induction Motor, both Squirrel Cage and Slip Ring type, 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, Digital Storage Oscilloscope, 3-phase Fluke Power Analyser, 1-phase Induction Motor and Thyristor Control Panel, DG set, Stepper Motor Training System, PWM based Induction Motor Drive, V/f Controlled AC Drive, d-Space Real Time Simulator software.

Power Electronics Lab

This lab is equipped with EMMA Microcomputer, Fast AD/DA converter, DDC Motor Module, Command Potentiometer, LCR Q-tester, SCR Firing Unit, Industrial Electronics Trainer with Oscilloscope, Digital Storage Oscilloscope (4-channel), HP Computer (Pentium-IV), Motion Control Development Kit, MCK240 Development Package with Kit, Thyristers and Motor Control (Make: Feedback, UK), Power-scope, Oscilloscope (Make:Yokogawa), CASPOC Simulation Software, Bedford and Parallel Inverter Trainer kit, Micro Controller based Firing Circuit for Controlled Rectifier trainer kit, Speed Control of Universal Motor using SCR Trainer kit,1-phase controlled Rectifier with cosine Firing Scheme Trainer kit, 1-phase Controlled Rectifier with Ramp comparator firing scheme Trainer kit, IGBT characteristics Trainer kit, 1-phase Cyclo-Converter Trainer kit, Speed Control of AC Motor using TRIAC Trainer kit.

Digital Electronics and Microprocessor Lab

This lab is equipped with Microprocessor Training Kits such as Dyna 8085 , STAR 85, VPL 8086/8088, Micro controller training Kit such as VMC-ICE31/51 and 80C196KC, Advance Handy Serial Programmer, Universal Programmer, Universal and Analog IC tester, Data Acquisition Software, Study Cards such 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, LVDT and DC motor speed control, 485 Protocol based Distributed Control System, Gain Measuring Instruments.

Electrical Maintenance Lab

This lab is mainly for the students of Base module who are expected to learn hands on training on repair and maintenance of electrical appliances. Number of appliances such as Domestic Refrigerator, Air conditioners, Geysers, Heat Convectors, Table and 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

This lab is also dedicated to the students of Base module who are expected to learn hands on training on electrical wiring and related activities. This laboratory is equipped with Mini Lathe Machine, Winding Machine, Drilling Machine, Cubical for different types of Wiring Practice, Necessary tools, Tools Display Boards, 1-phase and 3-phase Energy meters, Charts etc.

Circuits and Measurement Lab

This lab is equipped with Wave Analyser, Double Channel Recorder, Analog Oscilloscope, DC Power supply unit (0-300V), DC power supply (0-60V) and Storage adapter, Wheatstone Bridge, Kelvin Double Bridge, VTVM, Instrumentation Tutor, Digital Storage Oscilloscope (2-channel), HP Computer (Pentium-III), LCR-Q Meter, Meggar, etc. are some of the equipment available in this lab.

Control and Instrumentation Lab

This lab has 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, Analog and Digital Storage Oscilloscope (4-channel), Training and Development System for 8086, Data Acquisition of Control system, Direct Digital Control Training System, IBM Computer (Pentium-III), CA-06 Digital Motor, PC based Analog and Digital Motor Control, Distributed Control system DCS-5000, PC 45/ML programmable control teaching set, Digital Transducer and Instrumentation Trainer, Direct Digital Control System (CA-04), Rotary Servo 9 Plant(Servo 2).

PC Lab

The Department has a well-furnished PC lab for undergraduate students with more than 40 computers with internet connectivity. Software such as MATLAB, Multisim, etc. are installed in all the computers.

Energy Lab

In this lab energy related experiments are performed both by undergraduate and postgraduate students. The lab is equipped with advanced experimental setups such as Photo Voltaic Test Rig, Photo Voltaic Electric Generator, anemometers, solarimeter, etc. Experiments are carried out to plot I-V characteristics of PV modules, determine efficiency of PV driven water pumping system, etc.

Research and Project Lab

This lab is dedicated to mainly postgraduate students and research scholars for modelling and simulation works along with hardware implementation. Twenty PCs with 4 GB RAM has been provided in the lab. Uninterrupted internet connectivity is made available. Students can browse and download journal/conference papers from institutionally subscribed site such as IEEE explore, Science Direct, Elsevier, etc. The lab houses software like COMSOL, MATLAB, PSCAD, PSSE, etc.

VLSI Lab

VLSI lab is equipped with Mentor Graphics HDL Simulator.

Achievements:

The Department of Electrical Engineering is accredited by NBA for 2016-2019 & subsequently for 2019-2022.

(Prof. S. K. Bhagat)
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V. DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Established in the year 1985, the Department of Electronics & Communication Engineering (ECE) got the first batch of intake in 1986. The department is now meeting the requirement of technological challenges & the technical man power requirement through its updated course curriculum, experienced faculty members, skilled supporting staffs augmented with 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 faculty members are engaged to enhance the knowledge, skill & talents of the students.

The department offers courses in three UG modules: Base, Diploma and Degree in its undergraduate program, offering B.Tech. degree 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 UG program of the department is NBA accredited. The department has been running PG programmes for the students for more than a decade on Information Technology (IT), VLSI and Communication Engineering. Presently to carter the needs of the nation and current technological scenario, the department is running a PG course in Electronics and Communication Engineering with specialization in Communication Engg and VLSI.

The department is also running Ph. D. program in various specialized. At present there are 7 full time and 12 part time Ph. D. scholars pursuing in various areas of Electronics and Communication engineering.

The department has twelve qualified and young faculty members. It has fifteen laboratories equipped with sophisticated equipment 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). 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. Department have purchased the Cadence and Ansys HFSS software for Research and Development. 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 works. A Library inside the department is developed 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.

1. **Name of the Faculty with designation, qualification and area of Specialization:**
2.
3.

Sl. No.	Name	Qualification	Designation	Area of Specialization	No of Ph.D. students currently guiding	No of vacancies for Ph.D. students
1.	Dr. Md. Anwar Hussain	Ph.D. (Jadavpur University)	Professor	Communication Engg., Soft Information Security, Microwaves, Digital Signal	03	05
2.	# Dr. A. Dinamani Singh,	Ph.D. (NERIST)	Associate Professor	Communication Engineering	03	On Lien
3.	Dr. Rajesh Kumar	Ph.D. (Jamia Milia Islamia)	Associate Professor, and **Head**	Communication Engineering, Sensors and Circuits	02	04
4.	Dr. Tripurari Sharan	Ph.D (MNIT, Prayag Raj)	Assistant Professor	Low power Mixed signal Circuits and Systems Design	04	Nil

5.	Dr. Madhusudhan Mishra	Ph.D (IIT Kharagpur)	Assistant Professor	Signal Processing	NIL	04
6.	Dr. Pranab Kishore Dutta	Ph.D. (Jadavpur University)	Assistant Professor	Semiconductor Devices, VLSI circuit and Digital Design	03	01
7.	Dr. (Mrs.) Joyatri Bora,	Ph.D. (NERIST)	Assistant Professor	Wireless Communication Multiuser MIMO.	02	02
8.	Dr. Ashok Kumar Ray	Ph.D. (IIT Guwahati)	Assistant Professor	Microelectronics, Devices and Circuits.	Nil	04
9.	Mr. Rusnik Kima Mangang	M.Tech (Anna University)	Assistant Professor	Microelectronics and devices, VLSI design, Antenna and Microwave engineering	On study leave, pursuing his Ph.D at IIT Delhi	
10.	Mr. Akho John Richa	M.Tech(Satya bhama)	Assistant Professor	Digital Electronics, Devices, Semiconductors and VLSI Design.	pursuing his Ph.D at NERIST	
11.	Mr. Anil Kumar Gautam	M.Tech(NIT, Krukchetra)	Assistant Professor	Analog and Digital Electronics, Low power VLSI Design	pursuing his Ph.D at NERIST	
12.	Mr. M. Edison Singh	M.Tech(IIT Kgp)	Assistant Professor	RF and Microwave Engg	pursuing his Ph.D at IIT (ISM) Dhanbad	

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4. Name of the Program :

(a) M. Tech in ECE : Specialised areas : Communication Engg or VLSI

- **Eligibility Criteria : M. Tech in ECE :** BE/B.Tech in Electronics and Communication Engg, / Electrical and Electronics Engg/ Electronics and Telecommunication Engg. Prefereably with valid GATE score in the relevant Branch.
- **Intake Capacity: M. Tech in ECE :22 (18+4 EWS) Seats**
  (Subject to fulfilment of minimum selection criteria)
- **Syllabus for entrance Exam :** GATE syllabus.
- **Course structure :**

SEMESTER I

Course Code	Names of Subjects	L	T	P	C
MA-7102	LINEAR ALGEBRA	3	1	0	4
EC-7100	MODERN DIGITAL COMMUNICATION TECHNIQUES	3	1	0	4
EC-7101	SEMICONDUCTOR DEVICE MODELLING	3	1	0	4
EC-70xx	1st Elective-A **(FOR COMM. STUDENTS)** 1st Elective-B **(FOR VLSI STUDENTS)**	3	0	0	3
EC-70xx	2nd Elective-A **(FOR COMM. STUDENTS)** 2nd Elective-B **(FOR VLSI STUDENTS)**	3	0	0	3
EC-7155	COMMUNICATION ENGINEERING LABORATORY **(FOR COMM. STUDENTS)**	0	0	6	3
EC-7156	Analog and Digital Circuit Simulation Lab **(FOR VLSI STUDENTS)**	0	0	6	3
				TOTAL	**21**

SEMESTER II

Course Code	Names of Subjects	L	T	P	C
EC-7200	WIRELESS COMMUNICATION	3	1	0	4
EC-7201	CMOS MIXED SIGNAL CIRCUITS	3	1	0	4
EC-70xx	3rd Elective-A **(FOR COMM. STUDENTS)** 3rd Elective-B **(FOR VLSI STUDENTS)**	3	0	0	3
EC-70xx	4th Elective-A **(FOR COMM. STUDENTS)** 5th Elective-B **(FOR VLSI STUDENTS)**	3	0	0	3
EC-70xx	Elective-C	3	0	0	3
EC-7255	RF LABORATORY **(FOR COMM. STUDENTS)**	0	0	6	3
EC-7256	Circuit Simulation and FPGA Lab **(FOR VLSI STUDENTS)**	0	0	6	3
EC-7299	Seminar	0	0	6	3
				TOTAL	**23**

SEMESTER III

Course Code	Names of Subjects	L	T	P	C
EC-8199	Project Part I	0	0	16	8
				TOTAL	**8**

SEMESTER IV

Course Code	Names of Subjects	L	T	P	C
EC-8299	Project Part II	0	0	32	16
				TOTAL	**16**
				TOTAL CERDITS	**68**

(b) **Name of the Program :** Ph.D.

- **Eligibility Criteria :** As per UGC Regulation 2016
- **Availability of Seats for Ph. D. Programme in the department:** subject to merit based selection criteria and availability of supervisor and his/her consent.
- **Availability of supervisor** with reference to their score point: (Total = 20)
  i. Prof. Md. A. Hussain: (Available seats: 05)
  ii. Dr. Rajesh Kumar: (Available seats: 04)
  iii. Dr. T. Sharan: (Available seats: NIL)
  iv. Dr. M. Mishra: (Available seats: 04)
  v. Dr. P. K. Dutta: (Available seats: 01)
  vi. Dr. (Mrs.) Joyatri Bora: (Available seat: 02)
  vii. Dr. A K Ray: (Available seat: 04)
- **Syllabus for entrance exam**: 50% from research methodology and 50% from GATE syllabus.

Facilities available

Laboratories:

DSP & Embedded System Lab: The lab is equipped with latest 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 equipment 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), HFSS software, 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 equipment.

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 equipment & gadgets and practices in Industrial Electronics etc. The students get exposure in transformer winding, troubleshooting & maintenance of various equipment, 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 Software.

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 well equipped with software like Cadence, for Research and Development in VLSI circuits and systems, involving custom chip design as well as FPGA and sufficient numbers of computers, supported with UPS. It is being used for M. Tech. courses and research. There is a plan to upgrade this lab with highly sophisticated software and FPGA kits.

Departmental library: Departmental library consists of a good number of Technical books on all courses it is updated every year by procuring books worth more than 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.

Achievements

The department has been running for the last 30 years. 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 equipment that the department has. The department has many fulltime and part-time PhD scholars doing excellent research alongside of our PG students and a meritorious breed of UG and Diploma students.

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, TEQIP 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.

VI. DEPARTMENT OF MECHANICAL ENGINEERING

Introduction and Brief Profile of the Department:

Department of Mechanical Engineering came into existence as one of the core branch of engineering and started since the inception of the institute in 1986. The department offer Certificate programme, Diploma, Degree in Mechanical engineering in modular pattern of education having lateral and vertical entry. In addition, two M.Tech. programmes and Ph.D. programmes are started in 2006 onwards. The department is currently run by 16 Nos. of experienced/young motivated well-qualified faculty members from reputed institutes like IISc, IITs, NITs, JU, IT-BHU, BESU, etc. and experienced supporting staff to generate human resources to cater the fast growing industrial and academic need of the country at various levels. A total of 200 students per year (from eight North Eastern States and other parts of India) are taking admission in UG programme on different departments. It offers courses to train the students in the art of servicing, maintenance and troubleshooting aspects in certificate level, to impart supervisory skills to the diploma module students and to provide analytical and research skills in various subjects related to Mechanical Engineering and interdisciplinary areas to the degree module and Post-Graduation students.

The department offers Certificate courses, Diploma in Mechanical Engineering, B.Tech. in Mechanical Engineering and M. Tech. in Mechanical Engineering with specialization in Computer Integrated Manufacturing (CIM) and Thermal and Fluid Engineering (TFE) as well as Ph.D. in Mechanical Engineering. At present there are 28 Ph.D. scholars (Full time and Part time) doing research in different forefront areas. The research area includes: Bio-diesel production and investigation, Composite production and characterisation, Machining investigation of conventional and advanced manufacturing process, Tribological studies and related research, CFD, Numerical modelling of thermal processes, FEM modelling, Robotic manipulator, Numerical modelling of Advanced welding and Additive manufacturing, Intelligent manufacturing methods, etc.

Name of the HoD and Faculty members with Degree and areas of specialization

Sl. No.	Name of the faculty	Highest Qualification	Designation	Area of specializations/ Research interest	No of Ph.D. students currently guiding (Supervior/ Co-supervior)	No of vacancies for Ph.D. students (Tentative)
1	Dr. M. Chandrasekaran	Ph.D. (IIT Guwahati)	Professor & Head	Machining of hard and Composite materials, Automated manufacturing.	3.5 (3 sharing)	4.5
2	Dr. M. Muralidhar	Ph.D. (IIT Kharagpur)	Professor	Foundry, Intelligent Manufacturing, Production Management.	3	0
3	Dr. Pradip Lingfa	Ph.D. (IIT Delhi)	Professor	Alternate fuels for Internal Combustion Engines, Energy Studies.	4.5 (3 sharing)	3.5
4	Dr. Asis Giri	Ph.D.(IISc Bangalore)	Professor	Heat Transfer and Fluid Mechanics.	2 (2 sharing)	0

5	Dr. S. Mahto	Ph.D.(IIT Guwahati)	Professor	Mechanical Vibration, Robotics, CAD/CAM	3	5
6	Dr. Sutanu Samanta	Ph.D. (BESU)	Associate Professor	Non-conventional machining, Composite materials & Operation research.	4 (3 sharing)	2
7	Dr. S. S. Gautam	Ph.D. (BHU)	Associate Professor	Machine Design and Tribology.	2	4
8	Dr. Sandeep Singh	Ph.D. (IIT Guwahati)	Associate Professor	Rotordynamics, Machine Design and Tribology	5 (2 sharing)	2
9	Dr. M. P. Thaddeus	Ph.D. (IIT Bombay)	Assistant Professor	Industrial Engineering.	-	0
10	Dr. K. K. Mandal	PhD (Jadavpur University)	Assistant Professor	Non-commercial Machining	1	2
11	Dr. N. K. Rana	Ph.D. (NERIST)	Assistant Professor	Industrial Materials and Metallurgy.	-	2
12	Dr. Maryom Dabi	Ph.D. (IIT, Guwahati)	Assistant Professor	IC Engines and Biomass energy studies	-	2
13	Mr. Nabam Teyi	M.Tech. (NERIST)	Assistant Professor	Computer Integrated Manufacturing. Automation And Rotordynamics	-	-
14	Dr. S. K. Tamang	Ph.D. (NERIST)	Assistant Professor	Soft Computing, Modeling and Optimization of Machining Processes.	-	4
15	Md. S. M. Khan	M.Tech. (AMU)	Assistant Professor	Thermal Sciences.	-	-
16	Dr. Y. Nirsanametla	Ph.D. (IIT Guwahati)	Assistant Professor	Manufacturing Science and Technology	3.5	0.5

Name of the PG and PhD. Programme, Eligible Criteria, Intake/Vacancies, Ph.D. supervision and M. Tech. Course Structure

Department offers two M.Tech. and Ph. D. Programmes

- M. Tech. in Computer Integrated Manufacturing (CIM)
- M. Tech. in Thermal and fluid Engineering (TFE)
- Ph.D. in Mechanical Engineering (Full Time and Part Time)

Eligibility Criteria for M. Tech. and Ph.D. Programmes

As per Institute academic by-laws

Intake/Vacancies:

Intake for M. Tech. programme is Twenty-two (22) seats including EWS in each specialization. The number of vacancies for Ph.D. programme depends on availability of seats of the faculty members and field of specialization opted.

M. Tech. Course Structure

M. Tech. In Computer Integrated Manufacturing (CIM)

Semester I

Sl. No	Course Code	Title	L-T-P	Credits
1	ME-7101	Advanced Operations Research	3-0-0	3
2	ME-7102	Finite Element Methods	3-0-0	3
3	ME-7103	Computer Aided Design	4-0-0	4
4	ME-7104	Computer Aided Manufacturing	4-0-0	4
5	ME-7105	Automation in Manufacturing System	4-0-0	4
6	ME-7151	Sessionals-I	0-0-6	3
Total Credits				21

Semester II

Sl. No	Course Code	Title	L-T-P	Credits
1	ME-7201	Advanced Manufacturing Process	3-0-0	3
2	ME-7202	Advanced Manufacturing Management	3-0-0	3
3	ME-7203	Modeling of Manufacturing Systems	4-0-0	4
4	ME-70*	Elective -I	4-0-0	4
5	ME-70*	Elective -II	4-0-0	4
6	ME-7251	Sessionals-II	0-0-6	3
Total Credits				21

Semester III

Sl. No	Course Code	Title	L-T-P	Credits
1	ME-8098	Seminar	---	2
2	ME-8099	Project – Phase I	---	8
		Total Credits		10

Semester IV

Sl. No	Course Code	Title	L-T-P	Credits
1	ME-8099	Project-Phase II Thesis Evaluation Seminar and viva voce	---	 10 06
Total Credits				16

List of Electives

ME 7021	Flexible Manufacturing Systems
ME 7022	Intelligent Manufacturing Systems
ME 7023	Advanced Materials Technology
ME 7024	Machine Tool Engineering
ME 7025	Robotics
ME 7026	Theory of Machining
ME 7027	Advanced Tribology
ME 7028	Computer Aided Product Development
ME 7029	Design for Manufacture and Assembly
ME 7030	Composite Materials
ME 7031	Statistical Optimization Techniques
ME 7032	Applications of Soft Computing Techniques
ME 7033	Advanced Welding Technology

M. Tech. in Thermal and fluid engineering(TFE)

Semester I

Sl. No	Course Code	Title	L-T-P	Credits
1	MA-71**	Advanced Mathematics	3-0-0	3
2	ME-7100	Numerical techniques for Engineering Applications	3-0-0	3
3	ME-7111	Advanced Fluid Mechanics	4-0-0	4
4	ME-7112	Advanced Thermodynamics and Heat Transfer	4-0-0	4
5	ME-7113	Mechanical Systems Design	4-0-0	4
6	ME-7152	Practice - I	0-0-6	3
		Total Credits		21

Semester II

SI. No	Course Code	Title	L-T-P	Credits
1	ME-7211	Computational Fluid Dynamics and Heat Transfer	3-0-0	3
2	ME-7212	Measurements and control in Fluid & Thermal Engg	3-0-0	3
3	ME-70**	Elective I	4-0-0	4
4	ME-70**	Elective II	4-0-0	4
5	ME-70**	Elective III	4-0-0	4
6	ME-7252	Practice - II	0-0-6	3
		Total Credits		21

Semester III

SI. No	Course Code	Title	L-T-P	Credits
1	ME-8098	Seminar	- - -	2
2	ME-8099	Project – Phase I	- - -	8
		Total Credits		10

Semester IV

SI. No	Course Code	Title	L-T-P	Credits
1	ME-8099	Project - Phase II Thesis Evaluation Seminar and Viva Voce	- - -	 10 06
Total Credits				16

List of Electives

ME-7001	Viscous Flow Theory
ME-7002	Theory of Compressible Flow
ME-7003	Dynamics and Thermodynamics of Turbomachines
ME-7004	Cryogenic Engineering
ME-7005	Combustion Engineering
ME-7006	Convection & Multiphase flow
ME-7007	Conduction and Radiation
ME-7008	Gas Turbines and Jet Propulsion
ME-7009	Design of Heat Exchangers
ME-7010	Refrigeration Machinery and Components
ME-7011	Absorption Refrigeration and Heating Systems
ME-7012	Design of IC Engine Components and Sub-Systems
ME-7013	Alternative Fuels for Transportation

Laboratories and Facilities of the Department:

i. Strength of Material Lab
ii. Refrigeration and Air Conditioning Laboratory
iii. Dynamics and Kinematics Lab
iv. Gas Dynamics Lab
v. IC Engine and Thermal Engineering Lab
vi. Bio-Diesel Laboratory
vii. Heat and Mass Transfer Lab
viii. Fluid Power Control and Automation Lab
ix. CIM and Robotics Lab
x. Computer and CFD Lab
xi. Metrology and Material Science Lab
xii. Seminar Hall
xiii. Product design and Tribology Lab
xiv. Mechanical Workshops

Achievements of the Department

The department have been accredited with National Board of Accreditation (NBA) for its B.Tech. Programme for the period from 2016 to 2018 and also in the process of extension for further period. The department conducted STTP, conferences and seminars in the recent past. The faculty members have undertaken different sponsored project for development of infrastructural facilities in the area of their interest. The department has established state of the art “Biodiesel Centre” sponsored by DST to facilitate the research in

the energy field. The department has taken up consultancy work for testing of materials for BSNL and PWD departments and other private agencies. Several reputed Scientists and Professors have visited the Department in the recent past and delivered lectures on various relevant topics of Mechanical Engineering on the forum of various events. The department organized institute-industry interaction programs on “Industrial CNC System” and “Demonstration and Training on Bio-diesel Program”.

The faculty members are engaged in active research work in addition to their academic assignments. The research results are communicated to various forums at national and global levels. In the year 2019-2020, around 50 nos. of International/National Journals & Conference papers, two book chapters and one book were published by the faculty members. The placement for PG students have been undertaken by different reputed companies in the campus. Recently one patent has been granted for the faculty members on their work titled “A leak proof seal assembly for opening of a container”.

In the recent past, the department has also organized One Week Online International Workshop on “Advancements and Future Research Trends in Laser based Manufacturing Processes (AFRLMP-2020)” from 1st - 5th September 2020 and Application of Artificial Intelligence and Machine Learning in Engineering problems" sponsored by AICTE Training and Learning Academy (ATAL) New Delhi from 14th Sept. 2020 to 18th Sept 2020.

VII. DEPARTMENT OF FORESTRY

(Accredited with ICFRE with 'A*' Grade)

Profile of the Department:

The Department of Forestry has been a pioneer center of teaching and research in forestry for the northeast region since inception of North Eastern Regional Institute of Science and Technology (NERIST), Nirjuli, Arunachal Pradesh. The inherent and unique geographical features and edapho-climatic conditions harbor variety of flora and fauna in the north east region. The rich biodiversity of the region can generate economic value in terms of extractable plant products, compounds, genes and species, etc. In view of increasing environmental crisis and rapidly depleting biological resources, there is a need for capacity building and human resource development for proper evaluation, characterization, documentation, conservation and sustainable development of the plant and animal genetic resources of the region. The region is also home to a large variety of traditional crops that could form an important component of human diet in times to come. In this context, the Department of Forestry has been playing a vital role in human resource development activities through academic and research programmes in forestry in the region in particular and the of the country in general during the last three decades.

The aim of the department is to take forestry education and research to a greater height so that people of the region can by and large reap the outcome in planning and development activities. The department is providing quality education pertaining to the natural resource potential, exploration and socio-economic aspects to the educationally underprivileged tribes of the northeastern states. The uniqueness of the department essentially lies in the fact that there are experts and active researchers representing diversified areas of forestry among the faculty members. We believe that in order to have effective teaching must be done by teachers who are also actively involved in research in their respective areas of specialization. Faculty members of the department are also contributing in exploration, documentation and management of the forest wealth of the region through active participation in R & D activities.

The department also organizes seminars/ workshops/ short-term training programmes/ special training in various areas of forestry and allied disciplines to help in updating knowledge and skills of teachers/ scientist/ policy makers/ researchers at the regional and national levels. The Department, therefore, serves as a catalyst in the vital scientific and educational activities of regional/ national importance and has a commitment to continue its services. There are several ongoing research projects funded by various national and international agencies such as Department of Bio-Technology, Council of Scientific & Industrial Research, Indian Council for Agricultural Research, Department of Science & Technology, Ministry of Environment and Forests, North Eastern Council, All India Council of Technical Education, Ministry of Human Resource Development, UNDP, ISRO, IIRS, etc. The financial support received through these projects not only enables the faculty members in running their research programmes, but also enable the students to take challenging and modern research topics for their M.Sc. and Ph.D. degree programmes.

The faculty of the Department has published quality research papers in the journals of national and international repute. To date, over 500 research publications and more than 10 edited/ authored books are published from the department. The sustained efforts of the faculty have resulted in numerous awards, honours and recognitions to the teachers as well as to the students of the Department. The non-teaching staff of the department actively assist the department in carrying out its teaching and research programmes, besides helping in the conducting the practical classes. The level of expertise and infrastructure available in the department supports in fulfilling the mandate of providing training of the highest quality to the students of region in particular and country at large. The students are given exposure and training in various forest-based aspects through project work on the ecological problems of north-east India. Students completing B.Sc./ M.Sc. courses in forestry are placed in national/state civil services, private sectors and NGOs engaged in forestry activities

Head of the Department

Prof. Karuna Shrivastava is working as Head of the Department. With the active cooperation of all the faculty members, she has been leading the department towards remarkable progress to achieve its goal. Under her leadership, the Forestry department has recently been accredited with Indian Council of Forestry Research and Education (ICFRE), Dehradun with A* grade in June, 2020 for the period of three years.

Faculty Members: Brief profile of the faculties is provided below:

3.2 Faculty Members: Brief profile of the faculties is provided below:

Sl. No.	Name	Qualification	Designation	Area of specialization	No. of Ph. D. Student Currently guiding (Supervisor /Co-supervisor)	No. of Vacancies for Ph. D. Students
1	2	3	4	5	6	7
1.	Dr. Binay Singh	Ph.D.	Professor	Horticulture & Agroforestry	02-Supervisor 03-Co-supervisor	Nil
2.	Dr. C. L. Sharma	Ph.D.	Professor	Ethnobotany, Wood Science & Technology, NTFPs	04-Supervisor 03-Co-supervisor	Nil
3.	Dr. M.B. Sharma	Ph.D.	Professor	Ethnobotany, Wood Anatomy, Forest products utilization	05-Supervisor 04-Co-supervisor	Nil
4.	Dr. Karuna Shrivastava	Ph.D.	Professor	Fungal Diversity and Mycorrhizal Technology, Plant Pathology, Plant Biotechnology	05-Supervisor 05-Co-Supervisor	Nil
5.	Dr. P. R. Gajurel	Ph.D.	Associate Professor	Plant Taxonomy, Ethnobotany and Medicinal & Aromatic Plants	05-Supervisor 04-Co-supervisor	Nil
6.	Dr. S. Sureshkumar Singh	Ph.D.	Associate Professor	Plant Biotechnology, Natural Product (Phytomedicine) Microbial Diversity	07-Supervisor 02-Co-supervisor	Nil
7.	Dr. Awadhesh Kumar,	Ph.D.	Associate Professor	Wildlife Biology & Conservation, Animal Behaviour	06(6)-Supervisor 02-Co-Supervisor	01
8.	Dr. Govinda Pangging	Ph.D.	Assistant Professor	Ethnobotany and Agroforestry	01-Supervisor 01-Co-supervisor	01
9.	Dr. Ashish Paul	Ph.D.	Assistant Professor	Biodiversity Conservation, Forest Ecology, Carbon sequestration & Climate mitigation	04-Supervisor 02-Co-Supervisor	01
10.	Dr. Madhu Kamle	Ph.D.	Assistant Professor	Plant Biotechnology, Molecular Disease Diagnostics, Fungal-Plant Interaction	03-Supervisor 03-Co-supervisor	Nil
11.	Dr. Pradeep Kumar	Ph.D.	Assistant Professor	Biotechnology, Applied Microbiology, Biocontrol, Photochemistry	03-Supervisor 03-Co-supervisor	Nil

Name of **PG (Full Time/ Part Time) and the Ph. D. Programmes (Full Time/ Part Time), Eligibility Criteria, Course Structure with Course Codes, Intake/ vacancies, etc.**

PG Programme: **M.Sc. in Forestry** (2 years, Full Time)

The Department is running postgraduate programme on M.Sc. (Forestry). This is a 2 years programme consisting of 4 semesters. The final semester is fully practical oriented with a dissertation work in a selective subject of forestry to make the student specialized in the concerned field. Students from various parts of the country are joining the programme and completing their graduation successfully.

i Eligibility Criteria: B.Sc. in Forestry (4 year degree course from a recognized University/ Institute)

ii. PG Course structure with course code:

Semester	Course code	Course title	Credits L T P T
I semester			
	FR 7101	Forest Systematics and Ethnobiology	3-0-2 =4
	FR 7102	Forest Ecology & Biodiversity Conservation	3-0-2 =4
	FR 7103	Forest Protection	2-0-2 =3
	FR 7104	Forest Tree Improvement.	3-0-0 =3
	FR 7105	Forest Biotechnology	3-0-2 =4
	MA 7109	Biostatistics	3-1-0 =4
			22
II semester			
	FR 7201	Silviculture	3-0-0 =3
	FR 7202	Plantation Forestry	3-0-0 =3
	FR 7203	Forest Policies and Instruments	3-0-0 =3
	FR 7204	Social Forestry and Agroforestry	3-0-0 =3
	FR 7205	Wildlife Conservation and Ecotourism	4-0-0 =4
	AE 7223	Forest Hydrology and Watershed Management	2-1-0 =3
			19
III semester			
	FR 8101	Wood Science & Technology	3-0-2 =4
	FR 8102	Forest Goods & Services	3-0-2 =4
	FR 8103	Forest Geo-informatics	3-0-2 =4
	FR 8104	Forest Resource Management	3-0-0 =3
	FR 8105	Forest Seed Technology	2-0-2 =3
	FR ------	Elective	3-0-0 =3
			21
IV semester			
	FR 8299	Project	0-0-16 =8
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.			
List of Electives for M. Sc. IV Semester			
FR-8001	Global climate changes		3-0-0=3
FR-8002	Economics of agroforestry systems		3-0-0=3
FR-8003	Forests genetic diversity and conservation		3-0-0=3
FR-8004	Range land and pasture management		3-0-0=3

AUDIT COURSES FOR B.Sc. Agriculture and Horticulture STUDENTS ONLY		
I Semester		
FR-7177	Forest Science – I	3 0 0 =3
II Semester		
FR-7277	Forest Science –II	3 0 0 =3

iii. Intake/ Vacancies for M.Sc. in Forestry: 22 students including EWS

Ph. D. Programme in Forestry

i. Eligibility criteria: Students with M. Sc. in Forestry and related disciplines of Biological Sciences are eligible for the course. The Ph. D. students are selected through an entrance examination as per the existing UGC norms.

ii. Course Structure with Course Code for Ph.D.: The Programme is based on initial course work of twelve credits out of the courses listed below. A research student gets registered for his/her thesis work through a

comprehensive test and presentation of synopsis before a Departmental Post Graduate Committee (DPGC) after completion of the course work.

Course code	Course title	Credits L T P T
FR 9001	Concept of Forestry	3-0-0 =3
FR 9002	Climate Change and Forestry	3-0-0 =3
FR 9003	Timber & Non-Timber Forest Products	3-0-0 =3
FR 9004	Wildlife Management	3-0-0 =3
FR 9005	Applied Microbiology	3-0-0 =3
FR 9006	Agroforestry	3-0-0 =3
FR 9007	Nursery and Plantation Technology	3-0-0 =3
FR 9008	Forest Ecology and Management	3-0-0 =3
FR 9009	Remote Sensing and GIS in Forestry	3-0-0 =3
FR 9010	Wood Technology	3-0-0 =3
FR 9011	Principles & Techniques in Biotechnology	3-0-0 =3
FR 9012*	Research Methodology	4-0-0 =4

(*the course Research Methodology is compulsory for all Ph. D. candidates)

iii. Intake/ Vacancy: The Ph.D. vacancies fully depend on the availability of seats under the faculty members and their specialization. The present available seats under the faculty members are indicated below. However, the final allotments of seats will depend on the willingness of the concerned faculty members based on the candidate performance, experience and subject specialization.

Sl. No.	Name	Designation	No. of Vacancies for Ph. D. Students
1.	Dr. B. Singh	Professor	Nil
2.	Dr. C. L. Sharma	Professor	Nil
3.	Dr. M.B. Sharma	Professor	Nil
4.	Dr. Karuna Shrivastava	Professor	Nil
5.	Dr. P. R. Gajurel	Associate Professor	Nil
6.	Dr. S. Sureshkumar Singh	Associate Professor	Nil
7.	Dr. Awadhesh Kumar	Associate Professor	01
8.	Dr. Govinda Pangging	Assistant Professor	01
9.	Dr. Ashish Paul	Assistant Professor	01
10.	Dr. Madhu Kamle	Assistant Professor	Nil
11.	Dr. Pradeep Kumar	Assistant Professor	Nil

Facilities and Research Activities

Laboratories & Other Facilities

Over the years, the Department has established very good infrastructure facility, which cater to the needs of teaching and research programmes. The laboratories have been established for different discipline having adequate working space, comfortable seating arrangement, and all necessary equipments. Six distinct laboratories have been established to fulfill the requirements of the students and research scholars. All these laboratories are equipped with different equipments purchased through Institutional and projects grants. All laboratories have computers connected to online data network. About 40 doctoral students/research associates constitute the core working group. To aid further, students are having access to the Central Computing Facility,

Nursery, Library and BIF. The seminar hall of the department serves as the venue where lectures of external/internal faculties and research scholars are organized. The Department is well connected with telephone and LAN network.

The Department has maintained a herbarium to assist the faculty members, research scholars, students and visitors from other institutions in identification and study of plant specimens. The nursery has 3 green houses and a mist chamber wherein many of the rare and important plants of the region are maintained. The department has a well-developed documentation facility which is accessible to all the faculty, research scholars and postgraduate students. Bioinformatic Information Facility (BIF) is another important centre of the department. The centre has facilitated the advance research in the department particularly in the field Bioinformatics and Molecular Biology and also imparting the knowledge and application of Bioinformatics to the students, teacher and researchers of region

Some of the major instruments/facilities of the department includes like Autostainer, Automated CO_2 exchange system, Research Microscope, Phase Contrast Microscope, Stereo, Inverted and Fluorescent Microscopes, Plant tissue - culture facility, Deep Freezer (-80^o), Gas Chromatography, Kjeldahl Nitrogen Autoanalyser, ERDAS Software, Knife Sharpener, Sliding microtome, Photo automat, Real Time PCR Systems, Gel Documentation System, Plant tissue-culture work station, HPLC, Weather station, Rotorod Air samplers, Leaf area meter, UV–VIS Spectrophotometer, Gel electrophoresis, HP Plotter, Acutab Digitizer, Electronics balances, Laminar Air flow, HP workstations & Server, Planimeter, Photo Micrographic unit, Autoclave, Spectrofluorimeter, Soxhlet Apparatus, Fibre Apparatus, Ultra-pure Water Purification system, Cooling micro Centrifuge, GPS, BOD incubator etc.

i) List of Laboratories

Lab Nos.	**Name of Laboratory**
Lab 1	Wood Science and Forest Products
Lab 2	Plant Microbe Interaction & Biotechnology
Lab 3	Forest Systematics & Horticulture
Lab 4	Environnent & Natural Resource Management
Lab 5	Forest Ecology & Biodiversity Conservation
Lab 6	Wildlife Ressource and Conservation
Lab 7	Remote sensing and GIS
Lab 8	Bioinformatics

ii) Other Facilities:

Sl. No.	**Name of the Facilities**
1.	Departmental Library
2.	Computing/Internet Facility
3.	Forest Nursery
4.	Forestry Herbarium
5.	Seminar Hall
6.	Banana Conservation Plot

Research Activities of the Department

The Department has become one of the leading centers of R & D activities in the north east region in the field of forestry and its related areas**.** The faculties of the department have the potential to undertake diversified research projects in various fields of forestry which contribute to the development of Forestry research & education in NERIST. About 45 research projects funded by various agencies like DBT, ICFRE, DST, MoEF, MHRD, CSIR,

AICTE, GBPIHED, UNESCO, MacArthur Foundation (USA) etc. have been successfully completed. More than 55 Research Scholars have completed their Ph.D. so far and about 25 have been pursuing their Ph. D. work in the department. Most of these Ph. D. Scholars have been supported through the funds of these projects. More than 500 research papers have been already published by the faculty in reputed National and International journals, books and proceeding. Apart from research paper the faculty have edited and authored books on various aspects of Forestry.

The department is presently running more than 20 major research projects funded by various Govt. organization & Departments. During the past two decades, more than 70 R & D projects have been completed successfully by the department. The department has developed its infrastructure and established its reputation in R & D fields through the support of these research projects.

Research areas of the department includes Forest Ecology, Biodiversity conservation and management, Wood Science and Technology, Population biology, Taxonomy & floristic of higher plants, Biotechnology, *In-vitro* regeneration and conservation, Genomics and proteomics of soil microbes, Assessment of plant nutritive values, Phytochemical screening, Medicinal and Aromatic plants, NTFPs, Indigenous knowledge systems, Ethnobotany, Plant-Microbe interaction, Fungal diversity, Bioremediation, Microbial Molecular Ecology, Applied Microbiology, Integrated land management system, Rehabilitation/Restoration of degraded land, Wildlife Biology, Conservation & Management, Horticulture and Agro-forestry, Organic farming, Soil Fertility Management, Land cover/River basin mapping, Climate change, Carbon sequestration etc.

Achievements/awards/recognition

The faculty members of the department have been awarded some prestigious award & fellowship like NAAS Fellow, FNIE, FIAAT, FES; DST-BOYSCAST fellowship, DBT- Overseas fellowship, Singapore Botanic Garden Research Fellowship, DAAD Fellowship, DST-SERC Visiting fellowship, DST-Young Scientist, National Young Woman Bio-scientist, Nanda Memorial Award, Dr. K.G. Tejwani Award, Pran Vohra Award, PBC outstanding Post-Doc Fellowship by Council of Higher Education, Israel, Outstanding Post Doc Fellowship awards, etc. Besides the faculty members are nominated as Councilor of various Organization, editorial board members and reviewers of national and internal Journals etc.

Placement of students

The forestry students have been selected in various government and non-government organization throughout the country at different capacity, such as Assistant Professor in various universities, Scientist, Indian Forest Service (IFS), Assistant Conservator of Forest (ACF) and Forest Range Officer (FRO). Besides the B. Sc. and M. Sc. Passed-outs, students also have joined different managerial posts in various Govt and non Govt organization including renowned Tea Estates, Hindustan Paper Corporation, WWF, WTI, CAPART, SBI etc.

VIII. DEPARTMENT OF PHYSICS:

Introduction and brief profile of the Department:

The Department of Physics has **Two** Professors, **Four** Associate Professors and **Three** Assistant Professors.
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 covers a wide spectrum of theoretical and experimental physics viz., Plasma physics, liquid crystals, mathematical physics, semiconductor physics, superconductivity, laser Raman spectroscopy, Atmospheric Physics, electronics, photoluminescence, high energy physics and Solar Energy. Also, some of the faculty members have been acting as reviewers of DST and CSIR projects submitted by other scientists for possible funding, Ph.D. thesis adjudicators and research paper reviewers of Taylor & Francis as well as Elsevier publishers.

During 2013-14, DST, New Delhi has identified the department for funding under **FIST** program with a grant of **Rs. 1.43 crore** for creating sophisticated instrumentation facilities for use of PG, Ph.D.students as well as faculty members for their R&D activities.X-ray diffractometer, Laser Raman Spectrometer, broad frequency Impedance Analyzer and Differential Scanning Calorimeter have already been purchased under this program.

Fourteen sponsored research projects funded by DST, CSIR, MHRD and Third World Academy of sciences (TWAS), Italy have been completed in the field of liquid crystals, Laser Raman Spectrometer a well as one and solid state ionics. **One** in-House mini Research project has been completed. Currently, **One** research projects funded by SERB-DST (1) is in progress.

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

18 (Eighteen) Ph.D degrees awarded (**06** in liquid crystals, **04** in solid state ionics, **01** in dye sensitized solar cells, **05** in Raman spectroscopy, **01** in water research and **01** in ferroelectrics and multiferroics) have been awarded to the research students worked in the projects mentioned above by NEHU, Shillong, North Orissa University, Baripada and NERIST, Nirjuli. **Currently 10 (Ten**) more students are working for their Ph.D. degrees in the department.

Name of HOD and other faculty members with Degree and area(s) of specialization

Sl.No.	Name & Designation	Qualification & University	Specialization
1.	Prof. P. R. Alapati, **Professor on lien**	**Ph.D., 1988** Nagarjuna University	Soft Condensed Matter Physics (Liquid Crystals)
2.	Dr.Tado Karlo, **Professor & HoD**	**Ph.D., 1997** Delhi University	Mathematical Physics and Atmospheric Physics
3.	Dr. Arvind Pandey, **Associate Professor–On lien**	**Ph.D., 2000** Univ. of Rajasthan	Condensed Matter: Solid state Ionics & Superconductivity
4.	Dr. Th. Gomti Devi **Associate Professor**	**Ph.D., 2005** NEHU, Shillong	Vibrational Spectroscopy, Nanostructure materials, Quantum Chemical calculation
5.	Dr. MukeshUpadhyay **Associate Professor**	**Ph.D. – 2005** Dr R M L Awadh University Faizabad	Solid State Physics, Electronics
6.	Dr. Rajesh Kumar Yadav **Associate Professor**	**D. Phil. - 2007** Allahabad University	Condensed matter Physics (Theory)
7.	Dr. Kamal Saharia **Assistant Professor**	**Ph.D, 2009** Gauhati University	Theoretical Plasma Physics
8.	Dr. Akbari Jahan **Assistant Professor**	**Ph.D, 2014** Gauhati University	Theoretical Physics, High Energy Physics Phenomenology.
9.	Dr. Kunal Borah **Assistant Professor**	**Ph.D., 2014** Tezpur University	Electronics, Microwave Electronics, Antenna

Name(s) of the PG Programme(s), Eligibility criteria, Course structures with course codes, intake etc.

(I) Name of the PG Program : M.Sc. (Physics)

- **Program Eligibility criteria :**

As per institute academic by laws: B.Sc. with minimum 55 % marks in aggregate in Pass Course in Physics and 50% marks for major/honors in Physics with Mathematics as one of the subjects (5% relaxation for SC/ST candidates in both the cases).

- **Intake** : 22 including EWS

(II) Ph.D. program in Physics:

Following are the details of number of seats available along with the names of supervisors and their research fields.

S. No.	Name of the supervisor	Field of Research	No of Ph.D. student currently guiding	No of vacancies currently available
1.	Prof.P. R.Alapati Professor- On Lien	Soft Condensed Matter Physics (Liquid Crystals)	-	-
2.	Prof. Tado Karlo Professor&HoD	Mathematical Physics and Atmospheric Physics	04	04
3.	Dr. Arvind Pandey, Associate Professor –On Lien	Condensed Matter : Solid State Ionics & Superconductivity	-	-
4.	Dr. Th. Gomti Devi Associate Professor	Condensed matter Physics (Vibrational Spectroscopy, Nanostructure materials, Quantum Chemical calculation)	04	Nil
5.	Dr. Mukesh Upadhyay Associate Professor	Solid State Physics, Electronics	01	05
6.	Dr. R. K. Yadav Associate Professor	Condensed matter Physics (Theory)	01	05
7.	Dr. Kamal Saharia, Assistant Professor	Theoretical Plasma Physics	01	03
8.	Dr. Kunal Borah Assistant Professor	Microwave electronics, electromagnetic materials	02	02
9.	Dr. Akbari Jahan Assistant Professor	High Energy Physics Phenomenology.	02	02

(B) Eligibility Criteria: A good academic background with at least 55% marks in aggregate with M.Sc. (Physics). 5% relaxation for SC/ST/PH category.

COURSE STRUCTURE OF M. Sc. (Physics)

		Semester - I			
		L	**T**	**P**	**Cr**
PH7101	Classical Mechanics	3	1	0	4
PH7102	Mathematical Physics	3	1	0	4
PH7103	Computational Physics & Programming	3	1	0	4
PH7104	Quantum Mechanics-I	3	1	0	4

PH7151	General Physics Laboratory-I	0	0	6	3
PH7152	Computer Laboratory	0	0	6	3
		12	**4**	**12**	**22**

Semester – II

PH7201	Electrodynamics	3	1	0	4
PH7202	Statistical Mechanics	3	1	0	4
PH7203	Elementary Condensed Matter Physics	3	1	0	4
PH7204	Quantum Mechanics-II	3	1	0	4
PH7251	General Physics Laboratory-II	0	0	6	3
PH7252	Condensed Matter Physics Laboratory	0	0	9	5
		12	**4**	**15**	**24**

Semester – III

PH8101	Atomic and Molecular Physics	3	1	0	4
PH8102	Electronics	3	1	0	4
PH8103	Nuclear Physics	3	1	0	4
PH810*	Special Paper I	3	1	0	4
PH8151	Optics & Nuclear Physics Laboratory	0	0	6	3
PH8152	Electronics Laboratory	0	0	9	5
		12	**4**	**15**	**24**

Semester – IV

PH8201	Group Theory and Applications	3	1	2	5
PH820*	Special Paper II	3	1	0	4
PH825*	Special Paper Laboratory	0	0	6	3
PH80**	Elective	3	0	0	3
PH8299	Project	0	0	16	8
		9	**2**	**8+16**	**23**

Total credits **93**

***Each specialization will consist of two theory courses with one each in third and fourth semester and one laboratory course in fourth semester**

Facilities available in the department-major instruments, departmental library, Research Projects etc.

(A) Undergraduate Teaching Laboratories :

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

1. Millikan's Experimental set up
2. Frank-Hertz Experiment set up
3. Hall Effect Study setup
4. Hysteresis measurement set up
5. Verification of Uncertainty Principle setup
6. Band gap measurement setup
7. Transistor characteristic set up

8. Solar cell experiment setup
9. Moment of Inertia Measurement setup
10. Hydrogen spectra measurement setup, etc.

(B) Postgraduate Teaching Laboratories :

The department has **FIVE** laboratories for post graduate courses, viz., General Physics, Solid State Physics, Nuclear Physics, Electronics and Optics laboratories. All postgraduate course laboratories are fully equipped with requisite instruments. Some of the equipment are:

1. Michelson and Febry Parrot Interferometer
2. Wave Particle Duality set up
3. Thermoluminiscence Experiment
4. Heat Capacity
5. GM Counter
6. Kerr Effect setup
7. Experiments with Laser
8. Ferroelectric and Dielectric Measurement
9. Ultrasonic Interferometer
10. Biot-Savart Law Experiment
11. Zeeman Effect Experiment
12. Photoconductivity Experiment setup
13. Electrical and Thermal Conductivity setup
14. Hysteresis Experiment setup
15. Setup for Determination of Planck's Constant
16. Gamma-Ray Spectrometer

(C) Computer Laboratory:

The department has a Computer Lab with 15 Nos. of computers, connected via LAN and a multifunction printer.

(D) Research Labs :

The following sophisticated instruments are available in the department under FIST program of DST, New Delhi: 1. XRD 2. Raman 3. DSC 4. Impedance Analyzer with high temperature measurement facility.

Apart from teaching laboratories, the department of Physics has four research laboratories.

(E) Departmental library:

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

Achievements of the departments

(A) SPONSORED RESEARCH PROJECTS:

S. No.	Title of the project	Cost	Funding Agency	Status	Principle Investigator
1	Synthesis and characterization of liq. Crys. Materials of Tr. Metal complexes-for electrochromic displays and photochemical conversion	Rs.4,33,000/- And (04 Years)	DST, New Delhi	Completed (1993-1998)	P.R. Alapati
2	Study of electrooptical properties of polymer dispersed liquid cryst. Film prepared by PIPS method	US$ 3000 and (18 month)	TWAS, ICTP Trieste, Italy	Completed (1997-98)	P.R. Alapati
3	Molecular dynamics in some ferroelectric and model dimeric liquid crystals	Rs.33,50,000/-# (3 1/2 years)	D.S.T. New Delhi	Completed(1999-2003)	P.R. Alapati

4	Structural and phase transition studies of shiff base liquid crystal dimers	Rs. 8,60,000/- (04 years)	C.S.I.R. New Delhi	Completed(1997-2001)	P.R. Alapati
5	Sodium Ion Conducting Polymer Electrolytes and their Application in Solid State Rechargeable Sodium batteries	Rs. 7,75,000/-(4 years)	D.S.T., New Delhi	Completed (1995-1999)	A. Hashmi Co-investigator-H.M. Upadhyaya
6	Polymer Electrolyte Based Photochemical Solar Cells	Rs. 14,00,000/- (duration 3 yrs)	D.S.T. New Delhi	Completed	H.M. Upadhayay, Co-investigator S.A. Hashmi
7	Development of Supercapacitors using Polymer Electrolytes with Large Area Carbon and Conducting Electrodes	Rs. 10,61,275/- (duration 3 yrs)	D.S.T., New Delhi	Completed	S.A. Hashmi, Co-investigator-H.M. Upadhayay
8	Studies on Gel Electrolytes Based Electrochemical Supercapacitors	US $ 4000 (one and half Years)	Third Word Academy of Sciences, Italy	Completed	S.A. Hashmi
9	Ion Conducting Polymer/Gel Electrolytes for their application in Rechargeable Sodium batteries	Rs. 8,00,000/-(3 ½ years)	MHRD, GOI	Completed	S.A. Hashmi
10	Dielectric Relaxation Studies in Liquid Crystal Dimers	Rs. 6,00,000/- (3 ½ years)	MHRD, GOI	Completed	P.R. Alapati
11	Synthesis, characterization and Evaluation of the rare-earth based oxide ion conductors for the application in solid oxide fuel cells	Rs. 50,000/- (1½ years)	NERIST,Nirjuli	Completed	Sanjay Co-investigator- A. Pandey
12	Synthesis, characterization and evaluation of rare-earth based oxygen ion conducting ceramics for Solid Oxide Fuel Cells (SOFCs) applications	Rs.15 lacs. (3 and 1/2 years)	MHRD,GOI	Completed (2005-2008)	A. Pandey
13	LASER RAMAN SPECTROSCOPY STUDIES IN LIQUID CRYSTALMONOMARS & DIMERS	Rs.8.5. lacs.	CSIR, New Delhi	Completed	P.R. Alapati
14	Raman Spectroscopy studies on Vibrational relaxation & molecular reorintationalproceses in liquid		DST, New Delhi	Completed	Th. Gomti Devi
15	Frequency dpendent dielectric studies and molecular dynamics of nano particle doped liquid crystal composites	Rs. 43.50 lacs	DST, New Delhi	Ongoing	P.R. Alapati

(B) The department has been recognized for funding under FIST program of DST, New Delhi with a grant of Rs. 1.43 Crore during 2013-14.

IX. DEPARTMENT OF CHEMISTRY

Introduction and a brief profile of the Department

The Department of Chemistry started functioning under Physical Sciences Group since 1986. Later on in 1993, it was separated from the Group and was established as a full-fledged Department of the Institute. From the beginning of its establishment, the Department has continuously encouraged for both teaching and research & development activities besides Ph D programme in Chemistry. In that respect, the Department has also received funds through various sponsored projects taken up by the Faculty members. Since the academic session 2009-10, the Department has been offering M Sc (Chemistry) course with Organic Chemistry specialization. The Inorganic Chemistry specialization has also been introduced from the session 2015-16. Besides these, the Chemistry Department undertakes teaching of various UG courses of chemistry at the Base, Diploma, Degree and M. Tech levels of Engineering & Technology stream. Moreover, the Chemistry Department also undertakes chemistry courses for undergraduate students of B Sc (Forestry). The Department has highly qualified, experienced and dedicated faculty members drawn from various reputed Universities / IITs of the country.

List of Faculty members of the Department with Qualification, area of specialization and vacancies in the Ph D programme

S/No.	Name	Qualification	Designation	Specialization	No. of Ph D scholar(s) currently guiding	No. of vacancies
1	Prof H S Yadav	Ph D, Gorakhpur University	Professor, Director, NERIST	Inorganic chemistry (Catalysis & Green chemistry).	03	NIL
2	Prof P K Tripathy	Ph D, BHU, Varanasi	Professor	Organic chemistry (Synthetic organic chemistry).	NIL	NIL
3	Prof M F Hussain	Ph D, IIT, Delhi	Professor	Physical chemistry (Environmental Analytical chemistry).	NIL	NIL
4	Prof N Deb	Ph D, Dibrugarh University	Professor	Physical chemistry (Thermal analysis, Kinetics & Mechanism).	NIL	NIL
5	Prof A K Gupta	Ph D, NEHU, Shillong	Professor & Head	Organic chemistry (Synthetic organic chemistry, Bio-organic chemistry, Organo-metallic chemistry, Stereochemistry)	01(PT) as co-supervisor	NIL
6	Mr N G Singh	M Sc withNET, Kurukshetra University	Assistant Professor	Physical chemistry (Material Science & Surface Chemistry).	NIL	NIL

7	Dr J Bhuyan	Ph D, IIT, Kanpur	Assistant Professor	Inorganic chemistry (Bio-inorganic chemistry, Synthetic chemistry, Metalloenzymes, Solar energy, Synthetic Leaf, Nitric oxide chemistry, Nano-chemistry).	03	02
8	Dr M Yadav	Ph D, Gorakhpur University	Assistant Professor	Inorganic Chemistry (Bio-inorganic chemistry, Metallo-enzymes).	03+ 01(as Co-supervisor)	NIL
9	Dr S L Bharati	Ph D, Gorakhpur University	Assistant Professor	Inorganic Chemistry (Metallo-porphyrins)	01	03
10	Dr N N Yadav	Ph D, IICT/JNTU, Hyderabad	Assistant Professor	Organic Chemistry (Synthetic Organic Chemistry, Total synthesis, Method development, Bio-organic, Medicinal Chemistry & Process Chemistry)	03	01
11	Dr A Murugan	Ph D, NEHU, Shillong	Assistant Professor	Physical Chemistry (Electrochemistry, Waste water treatment)	03	NIL
12	Dr Pramod Kumar Yadav	Ph D, Gorakhpur University	Ramalingaswamy Fellow	Biochemistry, Proteins, enzymes and mammalian hydrogen sulphide metabolism	NIL	01

M Sc Programme in Chemistry **:** M Sc in chemistry with specialization in **i**norganic chemistry and organic chemistry

Number of seats available for M Sc Admission **:** 22 (Twenty two) including 04 seats for EWS

Eligibility: B Sc in Chemistry with Mathematics having 55% marks in aggregate and 50% marks for major/honours in chemistry. Selection for admission will be on the basis of admission test (written test) and as per the norms of NERIST. Seats for specialization in chemistry (Inorganic and Organic) shall be distributed among the students in order of merit of the M Sc Previous year (i.e., M Sc 1st year) and as per the existing rules of Chemistry Department.

Ph D Programme in Chemistry **:** Full-time and Part-time Ph D programme

Eligibility criteria for Ph D admission: As per UGC regulations adopted by NERIST. Please see the eligibility criteria in the Information Brochure. Selection for admission will be on the basis of admission test (written) and interview and as per the norms of NERIST. During interview, a candidate shall be asked to present his / her topic of research interest. NET / GATE qualified candidates will be preferred.

Facilities Available in the Department: At present, there are five Chemistry laboratories. Out of which, two laboratories, viz., Chemistry Lab-I and Lab-II are fully engaged in conducting practical classes of Base module / Diploma module / Degree module courses of Engineering & Technology and Forestry streams. There are three laboratories, viz., PG Lab-I, PG Lab-II and PG Lab-III to conduct M Sc practical classes for Inorganic Chemistry, Organic Chemistry and Physical Chemistry respectively. The Instrumentation Lab is also equipped with UV-VIS spectrophotometer, FTIR spectrophotometer and DSC instruments along with other computational facilities. Besides these, there are three research laboratories which have been developed through sponsored project funds received under various research projects. Two more new laboratories are under development and will be ready for use from next academic session. The library cum overhead projector and photocopying facilities are also available in the Department.

M Sc Course Structure with Course Codes

SEMESTER I

Teaching Scheme			**Contact Hours Per Week**	**Credit (s)**
S/No.	**Course Code**	**Course Title**	**L - T - P**	**C**
1.	CY 7100	Environmental Chemistry	4 - 0 - 0	4
2.	CY 7101	Inorganic Chemistry-I	4 - 0 - 0	4
3.	CY 7102	Organic Chemistry-I	4 - 0 - 0	4
4.	CY 7103	Physical Chemistry-I	4 - 0 - 0	4
5.	CY 7151	Laboratory Work-I (Inorganic Chemistry)	0 - 0 - 4	2
6.	CY 7152	Laboratory Work-I (Organic Chemistry)	0 - 0 - 4	2
7.	CY 7153	Laboratory Work-I (Physical Chemistry)	0 - 0 - 4	2
		Sub Total	**16 - 0 - 12**	**22**

SEMESTER II

Teaching Scheme			Contact Hours Per Week	Credit (s)
S/No.	**Course Code**	**Course Title**	**L - T - P**	**C**
1.	CY 7201	Inorganic Chemistry-II	4 - 0 - 0	4
2.	CY 7202	Organic Chemistry-II	4 - 0 - 0	4
3.	CY 7203	Physical Chemistry-II	4 - 0 - 0	4
4.	CY 7204	Molecular Spectroscopy	3 - 0 - 0	3
5.	CY 7251	Laboratory Work-II (Inorganic Chemistry)	0 - 0 - 4	2
6.	CY 7252	Laboratory Work-II (Organic Chemistry)	0 - 0 - 4	2
7.	CY 7253	Laboratory Work-II (Physical Chemistry)	0 - 0 - 4	2
		Sub Total	**15 - 0 - 12**	**21**

SEMESTER III

Teaching Scheme			Contact Hours Per Week	Credit(s)
Sl. No.	**Course code**	**Course Title**	**L - T - P**	**C**
1.	CY 80**	Major Electives-I/II/III (Specialization wise)	4 - 0 - 0	4
2	CY 80**		4 - 0 - 0	4
3	CY 80**		4 - 0 - 0	4
4	CY 8151 CY 8152 CY 8153	Laboratory work-III (Any one, specialization wise)	0 - 0 - 12	6
5.	CY 80**	Minor Electives-I/II	2 - 0 - 0	2
6.	CY 80**		2 - 0 - 0	2

		Sub Total	**16 - 0 - 12**	**22**

SEMESTER IV

Teaching Scheme			**Contact Hours Per Week**	**Credit(s)**
Sl. No.	**Course code**	**Course Title**	**L - T - P**	**C**
1.	CY 8200	Seminar	0 - 2 - 0	2
2.	CY 80**	Major Electives-IV/V	4 - 0 - 0	4
3.	CY 80**		4 - 0 - 0	4
4.	CY 80**	Minor Electives-III/IV	2 - 0 - 0	2
5.	CY 80**		2 - 0 - 0	2
6.	CY 8299	Project	0 - 0 - 16	8
		Sub Total	**12 - 2 - 16**	**22**
		Total Credits		**87**

LIST OF ELECTIVE COURSES

Major Electives-I/II/III

1. A student will be required to take any one of the following groups of major electives in SEMESTER-III :

Course code	Course title	L	T	P	C
	Inorganic Chemistry				
CY8001	**Organometallic Chemistry of Transition Metals**	**4**	**0**	**0**	**4**
CY8002	**Bio-inorganic Chemistry**	**4**	**0**	**0**	**4**
CY8003	**Applications of Spectroscopy in Inorganic Chemistry**	**4**	**0**	**0**	**4**
	Organic Chemistry				
CY8004	**Application of Spectroscopy to Organic Molecules**	**4**	**0**	**0**	**4**
CY8005	**Stereochemistry and Reaction Mechanism**	**4**	**0**	**0**	**4**
CY8006	**Natural Products**	**4**	**0**	**0**	**4**

Minor Electives-I/II

2. A student will be required to take any two of the following minor electives in SEMESTER-III

Course code	Course title	L	T	P	C
CY8010	**Materials Chemistry**	**2**	**0**	**0**	**2**
CY8011	**Radio and Radiation Chemistry**	**2**	**0**	**0**	**2**
CY8012	**Medicinal Chemistry**	**2**	**0**	**0**	**2**
CY8013	**Organic Photochemistry**	**2**	**0**	**0**	**2**

CY8014	**Computational Chemistry**	**2**	**0**	**0**	**2**
CY8027	**Frontiers in Inorganic Chemistry**	**2**	**0**	**0**	**2**

Major Electives -IV/V

3. A student will be required to take the following major electives in SEMESTER-IV:

Course code	Course title	L	T	P	C
Inorganic Chemistry					
CY8015	**Rings, Chains and Clusters in Inorganic chemistry**	**4**	**0**	**0**	**4**
CY8016	**Special Topics in Inorganic Chemistry**	**4**	**0**	**0**	**4**
Organic Chemistry					
CY8017	**Organic Synthesis**	**4**	**0**	**0**	**4**
CY8018	**Heterocyclic Chemistry**	**4**	**0**	**0**	**4**

Minor Electives III/IV

4. A student will be required to take any two of the following minor electives in SEMESTER IV

Course code	Course title	L	T	P	C
CY8021	**Quantum Mechanics of Atoms and Molecules**	**2**	**0**	**0**	**2**
CY8022	**Inorganic Photochemistry**	**2**	**0**	**0**	**2**
CY8023	**Bio-organic Chemistry**	**2**	**0**	**0**	**2**
CY8024	**Chemical Applications of Group Theory**	**2**	**0**	**0**	**2**
CY8025	**Solid State Chemistry**	**2**	**0**	**0**	**2**
CY8026	**Nuclear Chemistry**	**2**	**0**	**0**	**2**

Note: **The choice of Minor electives will depend upon the expertise/facilities available in the Department**

Ph.D. Course Structure with Course Codes (self study)

Each candidate has to study two compulsory papers (CY 9001 and CY 9002) and one optional paper (from CY 9003, CY 9004 and CY 9005). Total 12 credits have to be completed before giving the comprehensive seminar for registration for Ph D course.

Course Code	Course Title	Credit (L T P C)	Maximum Marks
CY 9001	Research Methodology	4 0 0 4	100
CY 9002	Physical Methods in Chemistry	4 0 0 4	100
CY 9003	Advanced Inorganic Chemistry	4 0 0 4	100
CY 9004	Advanced Organic Chemistry	4 0 0 4	100
CY 9005	Advanced Physical Chemistry	4 0 0 4	100

Achievements: The faculty members of the Department are engaged in research activities both in fundamental as well as applied aspects of Chemistry. Faculty members are active in publishing papers in National/International journals. Some of the faculty members of the Department had postdoctoral visits in UK and Polish Universities under Nehru centenary British Fellowship Award and INSA-PAS academic exchange programme and acquired experience in highly specialized

areas of Chemistry. One faculty member had been at Baylor University, Texas, USA as a Postdoctoral Research Associate. Another faculty member worked as a Post-doctoral fellow at Hankuk University of Foreign Studies, Yongin, South Korea. One faculty member was selected in Inspire Faculty Scheme by DST, Govt. of India. The faculty members have also published books and chapters in books with national and international publishers. Many sponsored research projects from various funding agencies such as DST, CSIR, etc. have been completed in the department. Few more projects are likely to be awarded to the department in future.

In general, the areas of research interest of the Faculty members of the department may be grouped as under:

Organic Chemistry: Synthetic and natural products chemistry, synthesis of amino acids and their derivatives with mechanistic pathways, heterocyclic compounds and modified steroids, isolation and identification of alkaloids & their activity, synthetic organic chemistry, total synthesis, method development, bio-organic, medicinal chemistry & process chemistry.

Inorganic Chemistry: Macrocyclic complexes of transition metals of industrial and biological importance, natural products like amavadine and it's molybdenum analogues, selenium base catalysts in the organic transformation reactions as one electron mediators, green chemistry methodology in synthesis of vitamins, bio-inorganic chemistry, synthetic chemistry, metalloenzymes, solar energy, synthetic leaf, nitric oxide chemistry, mammalian hydrogen sulphide metabolism, nanochemistry, metalloporphyrins, purifications, characterization and application of laccase enzymes obtained from different fungal strains.

Physical Chemistry & Environmental analytical chemistry: Studies on self purification power of river water, analysis of heavy metals in river water, co-precipitation studies of heavy metals using organic ligands, radiochemistry concerning application of radioisotopes for chemical investigation, kinetics of isotopic exchange reaction, kinetics and mechanism of thermal degradation pattern of heterometallic and polymetallic carboxylates with special reference to catalytic activity, studies of nano-materials, electrochemistry, waste water treatment.

X. DEPARTMENT OF MATHEMATICS:

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. In addition to teaching, the faculty members are actively involved in research. Also, some of the faculty members are active reviewers of many reputed journals and examined several Ph.D. theses of different Universities. 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 is running M.Sc. and Ph.D. programmes successfully. Department has started Ph.D. programme since 2007. At present there are Nineteen research scholars registered for Ph.D. degree under the supervision of faculty members of the department. Nineteen students have been awarded Ph.D. degree. At present, there are **One Professors, One Associate Professor and Two Assistant Professors.**

Name of the HoD and other faculty members with Degree and area(s) of specialization:

Sl. No	Name	Qualification	Designation	Area of Specialization	No. of Ph.D. Students currently guiding (Supervisor/Co-supervisor	No. of vacancies for Ph.D. Students
1	2	3	4	5	6	7
1.	Dr. B.K. Singh HoD	Ph.D. (1992), BHU, Varanasi	Professor & Head	Sampling Technique	Supervisor: 03 Co-supervisor: 01	04
2.	Dr. M.M. Dixit	Ph.D. (2002), BHU, Varanasi	Associate Professor	The Wavelet Transform	Supervisor: 05 Co-supervisor: 01	01
3.	Dr. M. Hassan	Ph.D. (2014), IIT, Guwahati	Assistant Professor	Differential Equations, Special Function, Water Waves, Linear Algebra, Fluid Dynamic	Supervisor: 03 Co-supervisor: 01	01
4.	Dr. C.P. Pandey	Ph.D. (2005), BHU Varanasi	Assistant Professor	The Wavelet Transform	Supervisor: 03 Co-supervisor: 02	Nil

Post Graduate & Ph.D. Programme

(a) **Post Graduate Programme (M.Sc. Mathematics)**

Eligibility Criteria: B.Sc. with 55% in aggregate for Pass course and 50% in Honours/Major (**or may be corrected as per Institute norms).** The admission to the M.Sc. Programme will be based on their performance in the written test conducted by NEPGET.

Intake: 22 seats including EWS are available for M.Sc.(Mathematics)

Course Structures with Course Code.

I SEMESTER

Course Code	Course Title	L T P	C R
MA 7101	Abstract Algebra	3-1-0	4
MA 7102	Linear Algebra	3-1-0	4
MA 7303	Real Analysis	3-1-0	4
MA 7105	Programming Languages	3-1-0	4
MA 7151	Programming Languages Lab.(C/C++)	0-0-4	2
		Total Credit	22

II SEMESTER

Course Code	Course Title	L T P	C R
MA 7201	Complex Analysis	3-1-0	4
MA 7202	Topology	3-1-0	4
MA 7203	Partial Differential Equations	3-1-0	4
MA 7204	Mathematical Methods	3-1-0	4
MA 7205	Numerical Analysis	3-1-0	4
MA 7206	Numerical Analysis Lab	0-0-4	2
		Total Credit :22	

III SEMESTER

Course Code	Course Title	L T P	C R
MA 8101	Functional Analysis	3-1-0	4
MA 8102	Probability & Statistics	3-1-0	4
MA 8103	Analytical Mechanics	3-1-0	4
MA 80**	Elective I	3-1-0	4
MA 80**	Elective II	3-1-0	4
		Total Credit:	20

IV SEMESTER

Course Code	Course Title	L T P	C R
MA 8201	Mathematical Programming	3-1-0	4
MA 8202	Discrete Mathematics	3-1-0	4
MA 80**	Elective III	3-1-0	4
MA 82**	Elective IV	3-1-0	4
MA 8205	Project		8
		Total Credit:	

LIST OF ELECTIVES

Electives I & II

(Every student is required to choose any two of the following.)

MA-8001	Advanced Real Analysis	(3-1-0: 4 Credits)
MA-8002	Number Theory	(3-1-0: 4 Credits)
MA-8003	Computational Linear Algebra	(3-0-2: 4 Credits)
MA-8004	Special Functions and Integral Transforms	(3-1-0: 4 Credits)
MA-8005	Optimization Techniques	(3-1-0: 4 Credits)
MA-8006	Sampling Techniques	(3-1-0: 4 Credits)
MA-8007	Fractional Differential Equations	(3-1-0: 4 Credits)
MA-8008	Design and Analysis of Algorithm	(3-1-0: 4 Credits)
MA-8009	Numerical Solutions of ODE	(3-1-0: 4 Credits)
MA-8010	Stochastic Processes	(3-1-0: 4 Credits)
MA-8011	Mathematical Modelling	(3-1-0: 4 Credits)
MA-8012	Wavelets	(3-1-0: 4 Credits)
MA-8013	Ring Theory	(3-1-0: 4 Credits)

Electives III & IV

(Every student is required to choose any two of the following.)

MA-8014	Operator Theory	(3-1-0: 4 Credits)
MA-8015	Graph Theory	(3-1-0: 4 Credits)
MA-8016	Numerical Solutions of PDE	(3-1-0: 4 Credits)
MA-8017	Operation Research	(3-1-0: 4 Credits)
MA-8018	Commutative Algebra	(3-1-0: 4 Credits)
MA-8019	Differential Geometry	(3-1-0: 4 Credits)
MA-8020	Fuzzy Sets and Fuzzy Logic	(3-1-0: 4 Credits)
MA-8021	Fluid Dynamics	(3-1-0: 4 Credits)
MA-8022	Measure Theory	(3-1-0: 4 Credits)
MA-8023	Finite Element Methods	(3-1-0: 4 Credits)
MA-8024	Control Theory	(3-1-0: 4 Credits)
MA-8025	Advanced Algebra	(3-1-0: 4 Credits)

(b) **Ph.D. Programme:**

Eligibility Criteria: Candidates having Master's Degree in Mathematics with 55% marks in aggregate (5% marks relaxation will be given to SC/ST/PH category) (**or may be corrected as per Institute norms).** The admission to the Ph.D. Programme will be based on their performance in the written test and interview conducted by NEPGET. Applicants, who wish to pursue Ph.D. while in employment/service, need to submit NOC from their employer along with the application form. NET/GATE score is not essential. However, those with NET/GATE will be eligible for scholarship subject to availability of fund sanctioned by the Govt. of India. The applicants who wish to do Ph.D. may contact the Head of department for confirming their availability of seats and choosing of their specialized topics and guides.

(c) **Course Structures with Course Code for Ph.D. Programme**.

Course Code	Course Title	L T P	C R
MA 9001	Research Methodology	4-0-0	4
MA 9002	Ring Theory	3-0-0	3
MA 9003	Continuum Mechanics	3-0-0	3
MA 9004	Commutative Algebra	3-0-0	3
MA 9005	Algebraic Topology	3-0-0	3
MA 9006	Differential Equations and Dynamical Systems	3-0-0	3
MA 9007	Time Series and Forecasting	3-0-0	3
MA 9008	Computational Fluid Dynamics	3-0-0	3
MA 9009	Advanced Algebra	3-0-0	3
MA-9010	Multivariate Analysis	3-0-0	3
MA 9011	Advanced Fuzzy Set Theory	3-0-0	3
MA 9012	Advanced Analysis	3-0-0	3
MA 9013	Water Wave Theory	3-0-0	3
MA 9014	Numerical Solutions of Partial Differential Equation	3-0-0	3
MA 9015	Fluid Dynamics	3-0-0	3
MA 9016	Probability & Statistics	3-0-0	3
MA 9017	Sampling Techniques	3-0-0	3
MA 9018	Stochastic Processes	3-0-0	3

(d) **Name of supervisors available**

(i) Dr. B. K. Singh
(ii) Dr. M. M. Dixit
iii) Dr. M. Hassan
iv) Dr. C.P. Pandey

(e) **Availability of seats under each supervisor**

(i) Dr. B. K. Singh - 04
(ii) Dr. M.M. Dixit - 01
(iii) Dr. M. Hassan - 01
(iv) Dr. C. P. Pandey - nil

Facilities available in the department:

(a) **Teaching Laboratories**: The department has one Computer laboratory for Undergraduate and Post Graduate programme fully equipped with 18 computers connected via LAN.

(b) **Computing facilities for Faculty members**: There are eight computers, three Printers, one Scanner, one Server. All computers are connected via LAN.

(c) **Departmental Library**: The department has set up its own library for the proper use of books, Journals supplied by NBHM & Central Library of the Institute.

Achievements of the Department:

(a) Sponsored research projects (completed)

(i) Application of set technology in Medical diagnosis and Decision making.
(ii) K-path covers & K-graphoidal of graphs (NBHM)
(iii) Some Algebraic Aspects of Fuzzy set, Rough set & soft set. (DST)
(iv) Mapping and Monitoring of water Resource Data and Modeling water system in selected watersheds. Sponsored by NRDMS Division, Department of Science & Technology.
(v) Analytical modeling for estimating wave loads on cylindrical structure; DST, Govt. of India.

(b) Research papers published

210 Nos. of research papers have been published by the department in International/National journals.

XI. DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

Introduction and a brief profile of the Department:

Science, engineering, and in a larger sense technology have arguably become the predominant force in shaping our vision of reality of the contemporary world. However, it is in the domain of the disciplines of the 'humanities and social sciences' learning, which enables the future technocrats to sustain the resilience of the human spirit in all spheres of life. The Department of Humanities and Social Sciences (HSS) of NERIST fulfills this vision of engendering and projecting a human content and consciousness in the students, required for the acquiring and expansion of technological and scientific knowledge by them through synthesizing the sciences and technologies with social sciences and humanities. Since 1993, the department of Humanities and Social Sciences has been functioning as an independent department offering courses in English, Economics, Sociology, Psychology and Management. The Department has earned a distinctive name for itself, primarily due to the wide-ranging experience of the members of its faculty and the application of innovative teaching methods, keeping in tune with the emerging developments in their respective fields of expertise. The prescribed courses apart, the Department provides consultancy services to various small and medium scale industries of the North Eastern region. This is coupled with a successful hosting of various short-term and need-based programmes, seminars and special lecture series for executives, teachers and the students alike. Most of the faculty members of the department have the distinction of successfully completing research projects sponsored by such agencies as ICSSR, ICAR, McArthur Foundation, Ministry of Social Justice and Empowerment of the Government of India, AICTE, Ministry of Human Resource Development, etc. Further, the faculty members are engaged in supervising research scholars on such subjects as Economics, Human Resource Management, Marketing Management, Financial Management, and Organizational Behavior, etc. leading to Ph. D. degrees. A developing technical mind must also acquire sensitivity to socio-cultural needs of human beings. With the experience of the old and the energy of the youth, the department of HSS strives to ensure that the budding technocrats and technopreneurs are armed with the quality of vision and personality which will enable them to use their skills in bridging the techno-social gap and establish a strong interface between science, technology and society.

Name of HoD and Faculty Members with Degree and areas of Specialization:

Name	**Designation**	**Area of Specialization**	No. of Ph.D. Students currently guiding (Supervisor/Co-Supervisor	No. of vacancies for Ph.D. students
Dr. B.D. Nayak	Professor	M.A. Economics, Ph.D.(Sambalpur University), Rural Development, Finance & Project Management, Entrepreneurship Development	-	NIL
Dr. P. Parida	Professor	M.A. Psychology, Ph.D. (IIT, Delhi), Organizational Behaviour, Managerial Effectiveness	-	4
Mr. Ranendra Prasad	Associate Professor & Head	M.A. (English), M. Phil, (Hyderabad), Indian English Fiction & Literary Theory	NIL	NIL
Dr.(Ms) S. Sinha	Associate Professor	M.A. Psychology, Ph.D. (IIT, Bombay) HRM, Organizational Behaviour	-	NIL
Dr. Raju Barthakur	Associate Professor	M.A. English, Ph.D. (Tezpur University) Language Communication.	Nil	6

Courses offered in the M. Tech & Ph.D. Programmes, Course code and structure:

M. Tech.					
Course Code(N)	**Course Title**	**L**	**T**	**P**	**C**
HS 7001	Organizational Behaviour	3	0	0	3
HS 7003	Management of Human Resources	3	0	0	3
HS 7004	Marketing Management	3	0	0	3
HS 7005	Project Management	3	0	0	3
Ph.D.					
HS 8001	Research Methodology	3	0	0	3
HS 8002	Quantitative Techniques for Decision Making	3	0	0	3
HS 8003	Entrepreneurship Development	3	0	0	3
HS 8004	Project Management and Financial Analysis	3	0	0	3
HS 8005	Financial Accounting and Business Management	3	0	0	3
HS 8006	International Human Resource Management	3	0	0	3
HS 8007	Knowledge Management	3	0	0	3
HS 8008	Corporate Social Responsibility	3	0	0	3
HS 8009	Emotional Intelligence and Creativity	3	0	0	3
HS 8010	Human Resource Information Systems	3	0	0	3
HS 8011	Macroeconomics and International Trade	3	0	0	3
HS 8012	Economic Growth Models and Development	3	0	0	3
HS 8013	Theory and Practice of Public Finance	3	0	0	3

Specializations available for Ph.D. Programme:

Total: 10(Ten) in either of the following specializations, Industrial Psychology/Organizational Behaviour/Human Resource Management, Communication Theory and New Media.

5 **Facilities available in the Department: Major Instruments, Departmental Library and Laboratories:**

Sl.	**Name**	**Facilities**
1	Computer Laboratory	Headed by Dr. P. Parida, is equipped with 5 numbers of computer with internet facility and printers & scanners.
2	Communication Skills Development Laboratory	Developed by Prof. B. D. Nayak and Mr. R. Prasad, Associate Professor (English) with the facility of modern equipment, audio system, LCD TV, LCD Projector, computers for 45 students
3	Language Laboratory	Developed by Prof. B. D. Nayak and Mr. Raju Barthakur, Associate Professor (English) with the facility of modern equipment, audio system, Electronic Boards, LCD TV, LCD Projector, computers for 45 students
4	Research Laboratory	Headed by Prof. B. D. Nayak with computing facility

XII. CENTRE FOR MANAGEMENT STUDIES:

Introduction and brief Profile of the CMS

CMS aims to pursue global vision without losing local priorities and train future managers to develop a synergy between global and local value systems. Centre offers MBA program in various specialization areas i.e. Human Resources Management, Marketing Management, System Management, Finance and Operation Management.

Details of HoC and Faculty members:

Sl. No	Name of faculty Members	Designation	Qualification	Specialization	No. of Ph.D. currently Supervising	No. of vacancies for Ph.D. students
1	Prof. R. M. Pant	Professor (on deputation)	MA, MBA, Ph. D.	Marketing, HRM	03	Nil
2	Dr. S. Choudhury	Assistant Professor & HOC	MBA, Ph.D.	MIS	04	Nil
3	Dr. B. Sarmah	Assistant Professor	MBA, Ph. D.	Marketing, HRM	03	Nil
4	Dr. M. Mall	Assistant Professor	MBA, Ph.D.	Finance	04	Nil

Name of PG: M.B.A (02 Years Full Time)
Course structure with Course Code (For 2 years' Full time MBA Programme)

Year :First		**Semester- I**	**Year :First**		**Semester- II**
S.No	Course Code	Course Title	S.No	Course Code	Course Title
1	MB7101	Principles of Management	1	MB7201	Marketing Management
2	MB7102	Business Economics	2	MB7202	Research Methodology
3	MB7103	Quantitative Techniques	3	MB7203	Human Resource Management
4	MB7104	Accounting for Managers	4	MB7204	Management Information System
5	MB7105	Operations Management	5	MB7205	Financial Markets Inst. & Services
6	MB7106	Business Law	6	MB7206	Bus. Ethics & Corp. Governance
7	MB7107	Organizational Behavior	7	MB7207	Financial Management
8	MB7108	Business Environment	8	MB7208	Cost and Management Accounting
9	MB7151	Bus. Comm. and IT Lab			
Year :Second		**Semester- I**	**Year : Second**		**Semester- II**
S.No	Course Code	Course Title	S.No	Course Code	Course Title
1	MB8101	Project Management	1	MB8201	International Business
2	MB8102	Strategic Management	2	MB8202	TQM & Six Sigma
3	MB8151	Enterprise Res. Planning	3	MB8299	Dissertation
4		Elective 1, (Group-1)	4		Elective 1, (Group-1)
5		Elective 2, (Group-1)	5		Elective 2, (Group-1)
6		Elective 1, (Group-2)	6		Elective 1, (Group-2)
7		Elective 2, (Group-2)	7		Elective 2, (Group-2)
8	MB8199	Industrial Training			

ANNEXURE I

Format of sponsorship certificate for PG (M.Sc., M.Tech. & MBA) program for employed persons
(This should be typed on the letter head of the sponsoring Organization)

Reference No. _____
Date : _____

To

The Director
NERIST
Nirjuli – 791 109
Arunachal Pradesh

Sub: Sponsoring an Employee for M.Sc./MBA/M.Tech. Programme

Sir/Madam,

Mr./Mrs./Ms. _____Designation _____ who is an employee in our organization, is hereby sponsored for pursuing M.Sc./MBA/M.Tech. Programme in _____ at your Institution as full-time student.

In the event of his/her selection for admission to the programme, he/she shall be relieved of his/her duties in organization for period of two year from.....to.....

Date: Signature :

Place: Name :

Designation :

Seal and Signature of sponsoring authority.

ANNEXURE II

Format of No Objection Certificate for Post graduate programme for employed persons
(This should be typed on the letter head of the sponsoring organization)

Reference No. _____
Date : _____

To

The Director
NERIST
Nirjuli – 791 109
Arunachal Pradesh

Sub: No Objection Certificate

Sir/Madam,

Mr./Mrs./Ms…….…….……Designation…..…… …… an employee in our organization, is seeking admission to Post graduate programme in …… ……. at your Institute.

In the event of his/her selection for admission to the programme, he/she will be granted leave of absence for a minimum period of two or three years from……..to……..

Date: Signature :

Place: Name :

Designation :

Seal and Signature of sponsoring authority.

ANNEXURE III

Format of Sponsorship Certificate for Ph.D. program for employed persons
(This should be typed on the letter head of the sponsoring organization)

Reference No. _____
Date : _____

To

The Director
NERIST
Nirjuli – 791 109
Arunachal Pradesh

Sub: Sponsorship Certificate.

Sir/ Madam,

Mr./Ms_____ who has been working in this organization as _____ is hereby sponsored for admission into the Ph.D. programme at NERIST, from the session starting on _____ as a full time student.

The employee will be relieved from his/her duties in the organization to join the Ph.D. programme of NERIST.

Date: Signature :

Place: Name :

Designation :

Seal and Signature of sponsoring authority.

ANNEXURE IV

Format of No-Objection Certificate for Ph.D. (Full Time/Part time) program for employed persons
(This should be typed on the letter head of the sponsoring organization)

Reference No. _____
Date : _____

To

The Director
NERIST
Nirjuli – 791 109
Arunachal Pradesh

Sub: No objection certificate

Sir/ Madam

It is hereby certified that Mr./Ms_____ has been working in this organization as _____.

This organization has no objection to his/her being admitted to the Ph.D. programme at NERIST, Nirjuli, from the session starting from _____ as a Full Time/Part Time student.

.

Date: Signature :

Place: Name :

Designation :

Seal and Signature of sponsoring authority.

ANNEXURE V

Format for No-Objection Certificate from Principal Investigator for project fellows
(This should be typed on the letter head of the sponsoring organization)

Reference No. _____
Date : _____

To

The Director
NERIST
Nirjuli – 791 109
Arunachal Pradesh

Sub: No objection certificate.

Sir/Madam,

Certified that Mr./Ms._____, is working as a _____ in the project (title of the Project) _____ in the Department/ Centre _____ funded by _____ since_____. I have no objection in allowing him / her to join the Ph.D. programme at NERIST under the category of project staff.

Further, he / she will be allowed to carry out his/her course work / research work of the Ph.D. programme without hampering the project work.

Date: Signature :

Place: Name :

Designation :

Seal and Signature of sponsoring authority.

ANNEXURE VI

Government of ……..

(Name & Address of the authority issuing the certificate)

INCOME & ASSEST CERTIFICATE TO BE PRODUCED BY ECONOMICALLY WEAKER SECTIONS

Certificate No. _____ Date: _____

VALID FOR THE YEAR _____

This is to certify that Shri/Smt./Kumari _____ son/daughter/wife of _____ permanent resident of _____, Village/Street _____ Post Office _____ District _____ in the State/Union Territory _____ Pin Code _____ whose photograph is attested below belongs to Economically Weaker Sections, since the gross annual income* of his/her 'family"** is below Rs. 8 lakh (Rupees Eight Lakh only) for the financial year _____. His/her family does not own or possess any of the following assets***:

I. 5 acres of agricultural land and above;

II. Residential flat of 1000 sq. ft. and above;

III. Residential plot of 100 sq. yards and above in notified municipalities;

IV. Residential plot of 200 sq. yards and above in areas other than the notified municipalities.

2. Shri/Smt./Kumari _____ belongs to the _____ caste which is not recognized as a Scheduled Caste, Scheduled Tribe and Other Backward Classes (Central List)

Recent Passport size attested photograph of the applicant

Signature with seal of Office _____

Name _____

Designation_____

NOTE:

1. *Income covered all sources i.e. salary, agriculture, business, profession, etc.
2. **The term "Family" for this purpose include the person, who seeks benefit of reservation, his/her parents and siblings below the age of 18 years as also his/her spouse and children below the age of 18 years.
3. ***The property held by a "Family" in different locations or different places/cities have been clubbed while applying the land or property holding test to determine EWS status.

ANNEXURE VII

RESEARCH METHODOLOGY for Ph.D. Entrance

(For all subjects under Science/Engineering/Humanities/Management)

Unit-I.	Research problem; Research objectives; Research methods, Types of research: Descriptive, Analytical, Applied, Fundamental, Quantitative, Qualitative, Conceptual and Empirical.
Unit-II.	Literature review: primary, secondary, e-resources, database sources; Formulation of Hypotheses; Defining and formulating the research problems;
Unit-III.	Research design and methods (Randomize block design, Complete randomize design and Latin squire design); Developing a research plan; Determining experimental and sample designs; Sampling error.
Unit-IV.	Data Collection and analysis; Data Analysis with Statistical Packages - Hypothesis-testing - Generalization and Interpretation; Computer Processing.
Unit-V.	Statistical Analysis – Introduction to Statistics – Probability Theories – Conditional Probability, Poisson Distribution, Binomial Distribution and Properties of Normal Distributions – Hypothesis Tests – One Sample Test – Two Sample Tests / Chi-Square Test, Association of Attributes - Standard Deviation – Co-Efficient of Variations. Statistical Applications – Correlation and Regression Analysis – Analysis of Variance – Partial and Multiple Correlation
Unit-VI	Reporting and thesis writing; Types of report; Report writing; Bibliography; Referencing; Presentation; Importance of effective communication; Copy right; Intellectual property right and patent law; Plagiarism.

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Overview of Central Library NERIST