

INSTITUTIONAL DEVELOPMENT PROPOSAL

For

**TECHNICAL EDUCATION QUALITY IMPROVEMENT
PROGRAMME
(TEQIP) PHASE-III**

**OF
MINISTRY OF HRD-GOVT OF INDIA**

**For consideration
Under
Sub-component 1.1
(Institutional Development for Participating Institutions)**

Submitted by



**JORHAT INSTITUTE OF SCIENCE AND TECHNOLOGY,
JORHAT 785 010, ASSAM**

1. INSTITUTIONAL BASIC INFORMATION

1.1 Institutional Identity

- Name and address of the Institution : Jorhat Institute of Science and Technology
Chenijan, Sotai, Jorhat, 785010, Assam
- Year of establishment : 1971
- Is the Institution AICTE approved? : Yes
Furnish AICTE approval No. : 1-462592651
- Type of Institution : Govt. funded
- Status of Institution : Non-autonomous
- Name and Designation of Head of the Institution (Full time appointee) : Dr. Bibeka Nanda Choudhury, Principal

1.2 Academic Information:

- **Engineering UG and PG programmes offered in Academic year 2016-17:**

S. No	Title of programmes	Level (UG, PG, PhD)	Duration (Years)	Year of starting	AICTE sanctioned annual intake	Total student strength in all years of study
1	B.E. in Civil Engineering	UG	4 years	2015	60	
2	B.E. in Mechanical Engineering	UG	4 years	2015	60	
3	B.E. in Electronics and Tele communications Engineering	UG	4 years	2009	60	
4	B.E. in Power electronics and Instrumentation Engineering	UG	4 years	2009	60	

- **NBA Accreditation Status of UG and PG programmes as on 31st December 2016:**

Total no of programmes eligible for accreditation (at least one batch pass out): 02

No. of programmes accredited: nil

No. of programmes applied for accreditation: nil

- **Status of Faculty Associated with Teaching Engineering Students (Regular & Contract) as on 31st December 2016:**

No. of Sanctioned Regular Posts	Present Status : Number in Position by Highest Qualification												Total Number of regular faculty in Position	Total Vacancies	Total Number of contract faculty in Position
	Doctoral Degree				Masters Degree				Bachelor Degree						
	Engineering Disciplines		Supporting Disciplines (Physics, Chemistry, Maths and English/ other languages)		Engineering Disciplines		Supporting Disciplines (Physics, Chemistry, Maths and English/ other languages)		Engineering Disciplines		Supporting Disciplines (Physics, Chemistry, Maths and English/ other languages)				
	R	C	R	C	R	C	R	C	R	C	R	C			
1	2	3	4	5	6	7	8	9	10	11	12	13	14= (2+4+6+8+ 10+12)	15=(1-14)	16= (3+5+7+9+ 11+13)
65	1	0	10	3	16	3	3	9	0	0	0	0	30	20	15

R=Regular, C=Contract

2. INSTITUTIONAL DEVELOPMENT PROPOSAL (IDP)

(Implementation period: April 2017- March 2020)

2.1 Give the Executive Summary of the IDP (max 2 pages).

Jorhat Institute of Science and Technology started functioning as the third govt. engineering college of Assam in 2009 with two AICTE approved engineering departments - Electronics and Telecommunication Engineering (ETC) and Power Electronics and Instrumentation Engineering (PE&I). The first batch of our students has already passed in the month of July 2013. In 2015 the institute started to offer B.E. degree in Civil Engineering (CE) and Mechanical Engineering (ME) with due approval from AICTE.

Jorhat Institute of Science and Technology is presently focused on producing quality graduates in engineering. Research, consultancy and industry interaction will foster in institutes that run appropriate research oriented programs. Therefore, we have proposed creation of new laboratories, modernization of existing laboratories, modernization of existing class room i.e. smart class room, improvement of faculty through qualification enhancement, training, starting of consultancy cells in departments, industry interaction through various activities etc.

Strengthening Institutions to improve Learning Outcomes and Employability of Graduates is to develop and augment facilities so that the overall Learning process improves to add high value to the students. The global scenario of technical education is rapidly changing and to keep pace with this change in the developed countries, the school is also compelled to improve the pedagogical skills of faculty, appraisal by students, organizing remedial classes for weak students, financial assistance to needy students, modification of syllabi and university regulation in order to have a better evaluation system, activities for improving transition rates etc. To achieve this goal, the broad areas of activities which the institute proposes to undertake, are:

1. Introduction of PG programme in Engineering.
2. Strengthening of Research capabilities through laboratory up-gradation.
3. Development of new laboratories and strengthening of existing ones for the UG/PG Programmes.
4. Modernisation of class rooms with teaching aids and furniture.
5. Strengthening of software library with multiuser engineering design/ analysis/ simulation software.
6. Strengthening of computer centre for Moodle implementation and for general use.
7. Increasing the number of eBooks
8. Introduction of teaching assistantships for encouraging M. Tech enrolment.
9. Faculty and staff professional development to facilitate training of trainers for improvements in employability and learning outcomes of graduates.
10. Effective implementation of outcome based education for obtaining NBA accreditation of all eligible programs within the project period.
11. Enhancing interaction with industry for improving employability of students.
12. Counselling and extending soft skill training to students for better performance at interviews.
13. Remedial classes for SC/ST/academically weak students for improving transition rate and reducing dropout rates.

2.2 Provide an action plan with timelines for : (not more than 1 page for each sub-activity)

(a) Improving the learning outcomes of the students:

2.2.1 Faculty training (qualification upgradation, subject upgradation & research competence, Pedagogical training, participation in conferences, seminars/workshops etc.)

Qualification up-gradation:JIST, Jorhat has both experienced and young/ dynamic faculty members in all departments of Engineering and basic sciences which is strength of the institution.

It is proposed to provide special funding support to faculty members having M.Tech./ M.Sc. for enhancement of qualification to Ph.D degree from reputed institutions like IITs, NITs etc. in the form of seed money as:

- If a faculty member is enrolled for qualification upgradation either through full-time or part-time or by sandwich joint arrangement other than the parent institution, then his/her payments towards fees charged for course work, registration fee etc., use of research facilities, consumables, expenses towards thesis printing and publication of thesis-based research papers will pay through TEQIP-III.
- If a faculty member is registered for qualification upgradation on full-time or part-time basis within the parent Institution: consumables, expenses towards thesis printing and publication of thesis-based research papers will pay through TEQIP-III.
- Seed money will also be extended as support to young faculty who are starting their carrier and who are not having any other support to initiate their consultancy work or research.

Subject up-gradation & research competence: It is essential for the faculty members to keep themselves up-to-date in their respective fields. For this they need to attend short term courses, summer/ winter schools, GIAN, SWAYAM course etc. **It is proposed to provide funding support for participation in one such course every year to every faculty member of the School under TEQIP-III fund.**

Pedagogical Training: There are many new developments that are occurring in the teaching-learning processes due to the ICT revolution. The enormous scope of online courses and the availability online materials are altering the teaching-learning processes beyond recognition. The faculty members have to adopt themselves to these changing scenarios. It is necessary to provide continuous training to the faculty on these new developments. The importance of outcome based teaching-learning process cannot be overstated. **Therefore, it is proposed to provide funding support for holding one workshop every semester on pedagogy to create the necessary awareness and to make the faculty adapt to the best and most appropriate teaching - learning processes.**

Participation in conferences/ workshops etc.: Conferences, symposiums, workshops are the forums for the faculty and the scholars for exchange of ideas with the experts and peers. Faculty and the scholars get to learn the new developments in various domains. Seeding of new ideas occur in these. Scholars also get the scope to present their works before their peer and experts and get the benefit of critical comments from domain experts. Collaborative works also develop through interactions in such forums. Exposure to reputed conferences,symposiums, workshops etc. is therefore very important for the faculty and the scholars. **It is, therefore, proposed to make provision for a component of the fund under TEQIP-III for TA/DA/Boarding &**

Lodging as per TEQIP-III rules for attending workshop/seminar/conference/FDPs in other institutions.

2.2.2. Staff Training: The technical staff in the laboratories need updating their knowledge and skills on the latest equipment, tools and techniques so as to be able to provide the desired level of technical assistance. **It is proposed to provide for organizing of workshops and training programmes for the technical staff and also for sending them for training periodically.** Some specific organizations identified for staff training include CFTRI (Mysore), NITTTR, Tool room Bhubaneswar. It is also necessary for the support administrative staff to update themselves on the latest procedures, tools and techniques. They also need to have exposure to the work culture and the environment in the best of institutions. **Provision is therefore proposed to be made for organizing periodic training programmes and for sending the staff on exposure visits.**

2.2.3 Increasing capacity of UG, PG and PhD education (increasing enrolment and starting new UG, PG and PhD programmes)

This institution will apply for NBA accreditation in the following programs:

- **Mechanical Engineering**
- **Civil Engineering**
- **Electronics and Telecommunication Engineering**
- **Power Electronics and Instrumentation Engineering**

AICTE has a made mandate to have at least 01-NBA accreditation programme to start another engineering programme in the institution. Therefore it is in our planning to apply for NBA accreditation by 2018

After obtaining NBA accreditation, institution has planned to add following programs

- M.Tech in existing Engineering departments and B.E. in Electrical Engineering and Computer Science and Engineering from the academic session 2019-2020

2.2.4. Investing in smart classrooms, campus Wi-Fi, e-library etc. and learning resources:

The smart classes is a modernized method of education in Indian education scenario which provides quality education to students by helping them in better concept formation, concept elaboration, improvement in reading skills and academic achievement. Therefore it is **proposed to make provision for a component of the fund under TEQIP-III**

- To equip all class rooms with multimedia projector and Wi-Fi connection.
- To upgrade 10 classrooms to smart class rooms with video conferencing facility.
- To equip with smart boards in selected rooms.
- To make the classrooms well-lit and ventilated
- To create the facilities like AC, sound system and other amenities in some class room to make it a multipurpose room.
- To procure furniture for modernization of existing laboratories, classrooms, libraries establishment of new laboratories and classrooms.
- To upgrade and modernize the Language laboratory equipped with computers, head phones, SPEARS NET LANGUAGE LAB SOFTWARE (with Users License) with a seating capacity of 60 users.
- It is proposed to make fund provision for enhancing the e-library with textbooks where available.
- It is proposed to strengthen software library with multiuser license for a number of

design/ analysis/ simulation software such as STAAD Pro, Autocad, MATLAB, COMSOL, LABVIEW etc.

b) Campus Wi-Fi and cameras for security and surveillance purpose

Strength:

The institute has 100 mbps speed lease line from NKN to provide internet facility. It has been extended through wired and wireless connection to faculty, staff and students of the college.

At present college academic building and library has IP based cameras for security and surveillance purpose.

Requirements:

- To extend internet facility through the WiFi and wired connection to all the hostels and faculty campus.
- To extend the IP based cameras to all the class rooms and college campus and hostels.

c) Establishment/Up gradation of Central and Departmental Computer Centers Strength:

The institution has one central computer center with 30 seating capacity.

- Sever room is equipped with 03 nos. of servers, Air conditioners, online UPS with battery backup.

Requirements:

- To upgrade the existing computer centre with 120 seating capacity.
- To establish 04 departmental computer centre in four departments namely Civil, Mechanical, ETC and PEI
- To procure and install unified threat management (UTM) for network security.
- To upgrade some of the computers for operation of new software.
- To provide storage solution
- To provide air Conditioning system for central computer center.
- To provide online UPS with batteries for electricity backup for department Computer centre
- Provision for Annual Maintenance Contracts after the expiry of warranty period for the computers and associated hardware

2.2.5. Improving the academic performance of SC/ST/OBC/academically weak students:

Institution will conduct Finishing School Program under which necessary subject related and communication skill related sessions will be arranged for SC/ST/OBC/academically weak students so that the academic performance of these students can be improved.

The Action plans for improving transition rate:

- Ensure all available scholarships in the institution for supporting financially needy students.
- Conduct remedial classes on difficult subjects apart from regular class hours and on holidays
- Conduct evaluation of their studies through class tests
- Engaging the students by giving assignments on simple topics and gradually increasing the gravity of topics
- Make them answering of university pattern questions and convince them about their performance in it
- Mentoring needy students.

- Provide counseling by External experts to needy students.
- Conducting Soft skill training for improving communication skill
- Arranging special coaching classes for improving their analytical, verbal and technical skill sets which are required for improving their employability.
- Setting up of a counselling cell in the campus and regular sessions of experts in the field of engineering.

2.2.6 Instituting academic and non-academic reforms including programme flexibility (Is there any need to revise the curriculum? When it was last revised?): JIST, Jorhat is affiliated to Dibrugarh University, Dibrugarh Assam. This University, the easternmost University in India, was established in 1965 consequent upon the provisions of the Dibrugarh University Act, 1965, enacted by the Assam Legislative Assembly. It is a leading research and innovation driven University that acts as a spatial slot to configure the socio-cultural dynamics of North East India.

The institution undertakes periodic revision of curriculum, based on feedbacks obtained from stakeholders such as students, faculty and industries at the end of each academic year for effective preparation of students to meet the job market requirement. Such revision are thoroughly examined at departmental level, then at Dibrugarh University at the level of ‘Undergraduate Board of Studies’, ‘Postgraduate Board of Studies’ and then finally at ‘Academic Council’ of the University

The institution has revised its curriculum and introduced semester Based Credit System (CBCS) from the academic session 2016-2017.

(b) Improving employability of the students

2.2.7 Increasing interaction with industry (What are the industries located in the vicinity? What role of industry is perceived for the institute?)

The major industries in Assam and the North-East region are petroleum and tea. Apart from these, there is huge potential for development of food processing, software, handicraft, cement etc. It is envisaged that the proposed enhancement in the School will provide opportunities for collaboration with these industries. It is proposed to carry out following activities with budgetary provision from TEQIP

- i. Collaborative research projects with Oil Refineries, such as Numaligarh Refinery Limited and others located in the state.
- ii. Collaborative research with tea and food industry, on topics such as tea quality improvement, packaging, automation, instrumentation, etc.
- iii. Collaborative research and development projects with software houses in the region, on topics such as data mining, big data analysis, network security, web technology, language technology, etc.
- iv. Activities such as guest lectures, interactive workshops, conferences, seminars, brain storming sessions, technical discussions etc. with members of the industry, outside experts, eminent personalities will be undertaken at regular interval.
- v. Facilitate professionals from Industry to work as Adjunct faculty in institute and short or long periods deployment of faculty from institutions to Industry for gaining industrial experience and/or work on projects in Industry

vi. Conduct Industrial Training, Orientation Courses, Industrial Visits etc for faculty and students at regular intervals, industrial exhibitions to highlight research facilities and expertise available with the institution.

vii. Seek and associate Experts from Industry in Curriculum improvement and review.

8. Student career counselling and placement:

To improve students' employability and to enhance their placement it is required to improve their soft-skills. The students need to be provided soft-skills training starting from the time of their admission. Special arrangements are required to be made involving experts in soft-skills training. Instruction materials and a good language laboratory are also essential for the purpose. Financial provisions are therefore proposed to be made for the expenditures for conducting placement grooming sessions, specialized soft-skills training classes etc. from TEQIP III.

2.2.9 Sponsored research, consultancy and other revenue generating activities:

- **Sponsored research:**

The Institute encourages investigation of basic and applied areas of science and technology, and high end technology development in the form of sponsored projects. The institutional support to its faculty for submitting Research projects and securing external funding through flexibility in administrative processes, infrastructure, and academic support are crucial. The faculty members of the Institution are carrying out research through funded projects from sponsoring agencies such as UGC and AICTE, etc. To promote increased participation particularly of newly joined faculty in research, R&D projects and consultancy it is propose to extend merit recognition and career incentives through actions like:

- A provision for seed money is proposed from TEQIP III fund to support young researchers for initiating their research work.
- The interaction with nearby industries such as Tea industry, petroleum and petrochemical based industry, food product manufacturing units, Construction and infrastructure industries will be enhanced. The industry would be encouraged to give live problems to the institution for solutions.
- Those faculties who have expertise would be encouraged to take up consultancy assignments, without affecting the teaching schedules and processes.

- **Consultancy and other revenue generating activities:**

All the faculty members will be encouraged to carry out the consultancy projects in collaboration with industries. The revenue generated through consultancy is fairly utilized for development of the institution. The facilities of the College will be used for the research work, theoretical analysis or experimentation required for generating and validating information in solving the industrial problems. The Civil Engineering Department takes up the consultancy like material testing, structural design, condition assessment, surveying, mix design, water quality analysis, site investigation, etc. By creating state of art facilities in all disciplines, consultancy services shall be provided to industries, institutions, government agencies and corporations, societies in future also.

2.3 Provide an action plan with timelines for

2.3.1 Obtaining autonomous institution status from UGC

The college is at present, affiliated to Dibrugarh University. The institute will approach Govt. of Assam "No Objection" to Dibrugarh University, to initiate with UGC for granting academic autonomy.

2.3.2 Improving the NBA accreditation status:

The college is not yet NBA accredited. However, all efforts are undertaken to accredit at least 02 departments by the end of 2018 and all the remaining departments by 2022. A dedicated team under the co-ordinatorship of a senior faculty has been formed. It is planned to invite resource persons from reputed institutions/ consultant to support the team for preparing the road map to achieve the goal.

2.4 Describe the following in brief:

2.4.1 Is any enhanced assistance / mentoring that the institution is looking forward from its ATU?

Not yet. JIST was established in 2009. Therefore at present the institute will try to create a platform to provide quality education in the field of engineering.

2.4.2 Does your BOG need strengthening, if yes, then how?

- BOG constituted for TEQIP-III project should be vested with financial and administrative powers for the overall developments of the institution. BOG should be strengthened by vesting more powers like recruiting of faculty & staff and retired persons for the smooth functioning of the institute and for betterment of student.
- The BOG need to strengthen for academic reforms of the institution.

2.4.3 Is there an ERP/MIS system existing, if yes, then any improvement, modification suggested. Improvement/modification suggested

Yes and it is proposed to convert the applications to web-based to enable remote access and cloud enabled.

No, Institution does not have any ERP system available in the campus, but planning to procure ERP software in future under TEQIP-III project.

2.4.4 Is there any mechanism i.e. special classes being conducted in the institution for improving the GATE score?

This institution has young and dynamic faculty members in all the departments. To improve GATE score of the students, faculty members of the institute were advised time to time to take extra/special classes for the final year students to prepare them for GATE. **It is therefore proposed to make a provision for financial support for conducting the special classes and for procurement of the necessary materials from TEQIP-III.**

2.5 Provide a Twinning Plan with a high performing institute with the objective of capacity building knowledge transfer and developing long term strategic partnerships. (Twinning plan will be formalized into Twinning agreement after finalizing the twinning partner).

Collaborations with other high performing institutions like IITs and NITs. Working on a Twinning Plan sharing knowledge and resources will definitely help in achieving capacity building, knowledge transfer and developing long term strategic partnerships. The institute will work towards a twinning agreement after finalizing the twinning partner.

Key areas are: increasing industry interaction and involvement in consultancy, live problems for student project, networked project implementation, pedagogy and outcome based education for international accreditation,

2.6 Is there any difficulty in Recruitment and selection of high-quality faculty? If yes, what are the reason & action plan to solve the issue?

Assam Public Service Commission recruits faculty for Engineering Colleges by conducting screening test/viva voce. (Nodal agency for the recruitment of Gazetted officer of the Assam Govt.) At the Govt. level, Assam Public Service Commission will be requested to expedite the recruitment process.

2.8 Describe briefly the participation of departments/faculty/students in the IDP preparation.

Principal conducted a meeting with all faculty members regarding preparation of Institutional Development Plan (IDP) for TEQIP-III project to be submitted to MHRD/NPIU in the prescribed format. All the faculty members were involved in these brainstorming sessions. Proposed IDP is prepared based on the inputs (feedbacks/suggestions) received time to time from the stake holders.