

INSTITUTIONAL DEVELOPMENT PROPOSAL
FOR
TECHNICAL EDUCATION QUALITY IMPROVEMENT
PROGRAMME
(TEQIP) PHASE-III
OF
MINISTRY OF HRD-GOVT OF INDIA
for
Sub-component 1.1

Submitted by



JORHAT ENGINEERING COLLEGE
JORHAT-785007, ASSAM

1. INSTITUTIONAL BASIC INFORMATION

1.1 Institutional Identity

- Name and address of the Institution : JORHAT ENGINEERING COLLEGE
GARMUR, JORHAT 785007
ASSAM
- Year of establishment : 1960
- Is the Institution AICTE approved? : Yes
Furnish AICTE approval No. : F.No. Eastern/1-3324378052/2017/EOA dated 30/03/2017
- Type of Institution : Govt. funded
- Status of Institution : Non-autonomous
- Name and Designation of Head of the Institution : DR. REETA SARMAH
(Full time appointee) : PRINCIPAL, JORHAT ENGINEERING COLLEGE

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	1960	75	300
2	B.E. in Electrical Engineering	UG	4	1961	60	240
3	B.E. in Mechanical Engineering	UG	4	1961	90	360
4	B.E. in Computer Science and Engineering	UG	4	1987	60	240
5	B.E. in Instrumentation Engineering	UG	4	1992	30	120
6	M.E. in Production and Industrial Engineering	PG	2	2006	15	60
7	M.E. in Instrumentation and Control	PG	2	2015	18	72
8	M.E. in Civil Engineering	PG	2	2013	18	72

- 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): 8

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)
105	17	0	7	0	23	16	14	7	1	0	0	0	62	43	23

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 Engineering College, a premier institution of North East India and the second Government Engineering College of Assam, started functioning with admission of its first batch of students in Civil Engineering, on 10th October, 1960. With a glorious journey, the College currently offers AICTE recognised B.E. courses in Civil, Electrical, Mechanical, Computer Science & Engineering and Instrumentation Engineering, M.E. and PhD course in Mechanical Engineering, Civil Engineering and Electrical & Instrumentation Engineering.

The TEQIP-III proposal, submitted by Jorhat Engineering College aims at improving the key areas of teaching, research and consultancy work. We address this issue in a top down manner. In order to sustain research work in an educational institution, there must be a set of dedicated research scholars who will be involved in cutting edge research under the supervision of faculty members. Without this, faculty members will not be able to devote sufficient time for research and volume of research work will be limited. Jorhat Engineering College has a good pool of qualified and experienced teachers who are capable of producing quality research. Therefore, the first objective is to encourage this faculty for registering themselves as Ph.D. guides in the affiliating university.

Jorhat Engineering College is presently focused on producing quality graduates in engineering. Research, consultancy and industry interaction will foster in institutes that run appropriate research oriented programmes. Therefore, we have proposed creation of new laboratories, modernization of existing laboratories, improvement of faculty through qualification enhancement, training, starting of consultancy cells in departments, industry interaction through various activities etc.

Students are the central entities in an educational institute. Primary objective is to provide quality education to them. Therefore, we have proposed certain activities like improving 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.

VISION OF THE INSTITUTE:

To develop human resources for sustainable industrial and societal growth through excellence in technical education and research.

MISSION

- To impart quality technical education at UG, PG and PhD levels through good academic support facilities.
- To provide an environment conducive to innovation and creativity, group work and entrepreneurial leadership.
- To develop a system for effective interactions among industries, academia, alumni and other stake holders.
- To provide a platform for need based research with special focus on regional development.

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.)

Jorhat Engineering College, Jorhat has both experienced and young/ dynamic faculty members in all departments of Engineering and basic sciences which is strength of the institution.

The institution has 23 faculty members possessing M.Tech degree in Engineering and 14 faculty members possessing M.Sc degree in Basic Sciences who will be sponsored:

- For enhancement of qualification to Ph.D degree from reputed institutions like IITs, NITs etc.
 - 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.

➤ **Subject upgradation & research competence**

To enhance subject knowledge of faculty members and students, the following activities will be undertaken during this project :

- Conducting workshops /conferences/Short term course by each Department during TEQIP-III project.
- Conducting training programmes for improving efficiency, governance, productivity and responsiveness.
- Medium and short term training courses are proposed in domain areas (like web technology, Linux administration, networking, android technology, data analytics, internet of things, machine learning, robotics, software packages like MATLAB, ANSYS, CATIA, STAD, LABVIEW etc).

➤ **Basic and advanced pedagogy training**

Basic and Advance pedagogy training programmes shall be arranged in the institution so that knowledge domain of the faculty members can be enhanced.

➤ **Participation in conferences, seminars/workshops**

The faculty members of the college shall be encouraged to attend conferences, seminars/workshops etc. so that subject knowledge of the faculty members can be enhanced. To enhance attendance, faculty members shall be paid TA/DA/Boarding & Lodging as per TEQIP-III rules for attending workshop/seminar/conference/FDPs in other institutions.

2.1.2 Staff training (Technical & Administrative staff)

Technical and Administrative staff shall be deputed to undergo training to enhance capability in their domain work in reputed institutes offering such training programmes.

The following areas are broadly identified in which the training programmes are proposed:

- Technical and support staff are to be trained for supervisory and skill development in using state of the art equipment and technology.
- Medium and short term training programs for newly appointed technical staff to carry out routine laboratory tests as per international standards.
- Medium and short term training courses are proposed in office automation and ICT.

- Communication skills Training Programmes for instructors, office staff & library staff
- Maintenance (upkeep) of records and office procedures shall be organized within the Institution.
- Carry out on-the-job training for both technical and non-technical staff within and outside the institute.
 - Further, the institute intends to impart training and send the staff for outside training during summer and winter vacation so that the academics activities are not be affected.
 - In addition to imparting training in the field of one's specialization/trade, the institute intends to give basic exposure of computer operation to all staff (technical and non technical) of the institute.

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 programmes:

- Mechanical Engineering
- Civil Engineering
- Electrical Engineering
- Computer Science and Engineering

AICTE has made mandatorily to have at least 01-NBA accreditation programme to start another engineering programme in the institution.

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

- M.Tech in Computer Science and Engineering from the academic session 2019-2020

2.2.4 Investing in smart classrooms, campus Wi-Fi (24*7 broadband connectivity and Wi-Fi access in all academic and administrative buildings and hostels (with a minimum of 2 MBPS speed for each connection)), e-library etc.

a) Modernization of Classrooms:

Strength:

- Institution has 28 class rooms equipped with multimedia projector and Wi-Fi connection.
- Institution has 04- smart seminar hall with multimedia projector, air conditioners, Wi-Fi connection, Video Lecture Capture Solution with seating capacity of 80

persons per hall. Online classes, NPTEL lectures, ICT based short term courses are being organized in these smart seminar halls.

- Institution has Language laboratory equipped with computers, head phones, SPEARS NET LANGUAGE LAB SOFTWARE (1+30 Users License) with a seating capacity of 30 users.

Requirements:

- To equip remaining 10 class rooms with multimedia projector and Wi-Fi connection.
- To equip all smart seminar halls 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 increase seating capacity of the language laboratory upto 60.

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, seminar hall, library and central computer centre 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 Centres

Strength:

- The institution has one central computer center with 120 seating capacity and four departmental computer centres with seating capacity as : CSc and Engineering

department = 60, Mechanical Engg Department = 30 , Civil Engineering Department = 30 , Electrical Engineering Department = 60.

- Sever room is equipped with 4 nos. of servers, Air conditioners, 40 KVA and 20 KVA online UPS with battery backup.

Requirements:

- 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

d) Modernization and strengthening of libraries and increasing access to knowledge resources

Strength:

The institution has

- One central library with 30000 titles and one departmental library in each department.
- The central library reading room has 20 sitting capacity.
- Library Management Software (LSEase LMS) with WEB OPAC (online public access catalogue)
- Library Book Scanner Model : Bookeye 4 V3 (Made in Germany) A3+ Size for digitisation of books/ documents.

Requirements:

- To subscribe latest e-Journals through Shodh Sindhu or other sources
- To create a digital library to access books through intranet and mobile phone.
- To create a CD Bank with proper identification and accessibility
- To increase the seating capacity of the central library reading room
- To procure furniture for reading room and central library.
- Creating of additional space within central library by infrastructural work.

2.2.5 Improving the academic performance of SC/ST/OBC/academically weak students through innovative methods, such as remedial and skill development classes, peer assisted learning for increasing the transition rate, non cognitive skills and pass rate

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 counselling 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?)

Jorhat Engineering College, 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 Choice 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?)

Jorhat Engineering College is located at the distance of four kilometers from the heart of the city Jorhat. The Jorhat railway station is at a distance of 3 k.m. and the Rowrah airport is 12 k.m. Institution has a Training and placement cell. This cell will have great bearing on the Engineering Curriculum, exposure to industrial atmosphere for engineering students and subsequent placement of young graduating engineers in industries across the country. With the advent of globalization and opening up of Indian economy to outside world, competition among industries has become stiff. To solve their engineering problems they look up now to engineering Institutions. Similarly, there is an urgent need to prepare engineering students for jobs in multinational companies, by exposing them to newer technologies and engineering methodologies. These objectives can only be achieved well by bridging the gap between industry and academia.

In the vicinity of the institution there are tea industries, Oil India Limited, ONGC, Numaligarh Refinery Limited.

To Promote Industry-Institute interaction the following action will be taken:

- Encouraging engineers from industry to visit the college to deliver lectures.
- Participation of experts from industry in curriculum development.
- Arranging visits of faculty members to various industry
- Professional consultancy by the faculty to industries.
- Industrial testing by faculty & technicians at site or in laboratory.
- Joint research programmes and field studies by faculty and people from industries.
- Visits of faculty to industry for study and discussions or delivering lectures on subjects of mutual interest.

- Visits of industry executives and practising engineers to the Institute for seeing research work and laboratories, discussions and delivering lectures on industrial practices, trends and experiences.
- Memoranda of Understanding between the Institute and industries to bring the two sides emotionally and strategically closer.
- Human resource development programmes by the faculty for practising engineers.
- Short-term assignment to faculty members in industries.
- Visiting faculty/professors from industries.
- Professorial Chairs sponsored by industries at the Institute.
- R&D Laboratories sponsored by industries at the Institute.
- Scholarships/fellowships instituted by industries at the Institute for students.
- Practical training of students in industries.

2.2.8 Student career counselling and placement:

The career counselling provides consultation for academic, personal, social and vocational development, assisting students in analyzing interests, aptitudes, personal traits, values, attitudes and desired lifestyles for suitable employment and educational opportunities. The office provides support for faculty, staff, and administration on the employment trends, standards, and requirements that affect the particular office or department. Institution has designated faculty members to counsel students of each class on regular basis. This faculty member helps students in academic planning for college and career readiness, enrichment and extracurricular engagement among the students.

(c) Increasing faculty productivity and motivation

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.

- **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. The Institution is already providing consultancy services to World Bank Assisted RWSS – LIS Projects in Composite Water Supply Scheme for sustainability & Quality in Jorhat, Jorhat Central and Jorhat North West Development Block of Jorhat District Assam. 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 Govt. of Assam is approached to issue “No Objection” to Dibrugarh University, to initiate with UGC for granting academic autonomy. The process may take 1 ½ to 2 years time.

2.3.2 Improving the NBA accreditation status:

The college is not yet NBA accredited. However, all efforts are undertaken to accredit at least 3 departments by the end of 2019 and all the remaining departments by 2022. A dedicated team under the co-ordinatorship of a senior professor has been formed. A resource person from TTTI, Kolkata was invited on to support the team in 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?

Jorhat Engineering College is a State funded Government Engineering College affiliated to Dibrugarh University. University plays a vital role in academic reforms like curriculum revision, examination and evaluations etc.

Dibrugarh University, Assam can help this institution in following ways:

- Academic autonomy from UGC by forwarding our proposal.
- Allowing this institution to start new PG programmes in CSc & Engineering.

- University should sign MOUs with other world renown Universities, Colleges for research collaborations, student exchange programmes, trainings for the students, organizing expert lectures by eminent personalities.
- Starting new scholarships schemes for meritorious and economically weak students.
- University should revise its curricula frequently based upon latest technologies and demands by including industry personnel in board of study meetings.
- To Sign MOUs with Industries/ other organizations by ATU for providing training to UG students.

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.

Institution has one MIS software with HR module, Bill Section module, Student Management module, Asset and Inventory module, and Scholarship management module, e-Circular with SMS alerts.

Improvement/modification suggested

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 SAP 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 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 subject related classes for 3rd and 4th year students during lunch break or after normal teaching hours in addition to their normal teaching duties. Institution is also planning to hire GATE coaching agency for the students in respective branch so that GATE

qualifying percentage by the students can be improved. Collaboration with some IIT to improve subject knowledge, problem solving skill and creation of online resource of GATE questions for use by faculty members and students will improve GATE qualifying percentage by the students. From the current year, GATE tutorial classes are made mandatory in the class programmes.

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).

Institution is planning to sign the MOUs with the high performing institutes like IIT Guwahati, NIT Silchar. MoUs will be signed for upgradation of subject knowledge of faculty members, for fostering research & development activities and improve technical skills of the students & offer better placements.

The various departments of eminent institutions will be requested to identify training needs pertinent to our faculty and students, in regard to changing technology will also be done in this project phase.

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.

2.7 Give an action plan for ensuring that the project activities would be sustained after the end of the Project.

The activities initiated under the TEQIP III should be sustained after the completion of the project. Since funding will stop after three years, we need to plan in advance regarding the issue of financial resources after the project period. The institution plans to create four funds, namely, Corpus fund, faculty development fund, equipment replacement fund and maintenance fund for the sustainability of the good work initiated under the project. Guidelines will be formulated for populating these funds from the internal revenue

generated from consultancy services. External agencies like oil industries located in the region will also be approached for funding the activities through collaboration.

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

Principal conducted a meeting with all Heads of Departments, Training & Placement Officer, senior faculty members and NBA accreditation team members in institute conference hall regarding preparation of Institutional Development Plan (IDP) for TEQIP-III project to be submitted to MHRD/NPIU in the prescribed format. All Heads were requested to submit report based on IDP format and prepare a action plan pertaining to their departments/sections in consultation with faculty, staff and students of respective departments. All Heads convened series of meetings and submitted report and action plan for establishment/modernization of laboratories, Modernization of machinery and Equipments, Organising National & International Conferences /Workshop /Seminar, Enhancement of skill of Faculty, Enlacement & training of soft skill of students, Institute – Industry Interaction, Research & Development/ Consultancy work, Counselling / guidance/arrangements of extra classes for competitive exam, Research oriented projects. Information received from all departments/sections were compiled at the central level and Institutional Development Plan (IDP) for TEQIP-III project was prepared.