

**TECHNICAL EDUCATION QUALITY IMPROVEMENT
PROGRAMME (TEQIP)**

PHASE- III

**ACTION PLAN/
INSTITUTIONAL DEVELOPMENT PROPOSAL**

For

Sub-Component 1.2:

**“WIDENING IMPACT THROUGH
AFFILIATING TECHNICAL UNIVERSITIES(ATU’s) IN FOCUS STATES”**

Submitted by :



ASSAM SCIENCE AND TECHNOLOGY UNIVERSITY

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1. INSTITUTIONAL BASIC INFORMATION

1.1 Institutional Identity

: The Assam Science and Technology University was established vide Assam Science and Technology University act, 2009, by Government of Assam for affiliating the technical and engineering institutions of the state.

- Name of the University : ASSAM SCIENCE AND TECHNOLOGY UNIVERSITY
- Type of Institution : Government aided state university
- Status of Institution : Autonomous Institute as declared by ASTU Act 2009, Government of Assam
- Government of Assam notification number : ATE.222/2008/48
- 4. PAN number : AAAJA2022Q
- 5. Names of Head of the Institution and Project Nodal Officers

Heads and Nodal Officers	Names	Phone Numbers	E-mail Addresses
Head of the Institution	Prof. Dhiraj Bora (Vice Chancellor)	9435519245	dhirajboraipr@gmail.com
TEQIP Coordinators	Dr. Kalyan Kumar Das (Registrar)	9435305838	kkdas1971@gmail.com
	Dr. Nripen Das (Academic Registrar)	9864016839	academic.astu@gmail.com
Project Nodal Officers for :			
Academic Activities	Dr. Nripen Das	9864016839	academic.astu@gmail.com
Civil Works including Environment Management	Dr. Nripen Das	9864016839	academic.astu@gmail.com
Procurement	Dr. Nripen Das	9864016839	academic.astu@gmail.com
Financial Aspects	Mr. Debajyoti Goswami	9435092233	fao.astu@gmail.com
Equity Assurance Plan Implementation	Dr. Kalyan Kumar Das	9435305838	kkdas1971@gmail.com

1.2 Academic Information

- **Engineering programs offered in Academic year 2017-18**

Sl. No	Title of programs	Level (UG, PG, PhD)	Duration (Years)	Year of starting	Total intake
1	Doctor of Philosophy	PhD	3	2015	30
2	M.Tech- Energy Engineering	PG	2	2016	14
3	B.Tech-Energy Engineering (proposed)	UG	4	2017	30

- **List of institutions affiliated under Assam Science and Technology University (ASTU)**

Sl. No	Name of the Institution	Program	Level (UG, PG)	AICTE approved courses	Approved Intake	Duration of courses (Years)
1	Girijananda Chowdhury Institute of Management and Technology (GIMT), Azara	Engineering and Technology	PG	Computer Science and Engineering	18	4
		Engineering and Technology	PG	Electronics and Communications Engineering	18	4
		Engineering and Technology	PG	Instrumentation and Control Engineering	18	4
		Engineering and Technology	UG	Applied Electronics and Instrumentation Engineering	60	4
		Engineering and Technology	UG	Civil Engineering	60	4
		Engineering and Technology	UG	Computer Science and Engineering	60	4
		Engineering and Technology	UG	Electrical Engineering	60	2

		Engineering and Technology	UG	Electronics and Communications Engineering	120	2
		Engineering and Technology	UG	Information Technology	60	2
		Engineering and Technology	UG	Mechanical Engineering	120	2
		MCA	PG	Masters in Computer Applications	60	2
		Management	PG	Masters in Business Administration	60	2
		Management	PG	Post Graduate Diploma in Management	60	2
2	Girijananda Chowdhury Institute of Management and Technology (GIMT), Tezpur	Engineering and Technology	UG	Civil Engineering	60	4
		Engineering and Technology	UG	Mechanical Engineering	60	4
		Engineering and Technology	UG	Electrical Engineering	60	4
		Engineering and Technology	UG	Electronics & Communication Engineering	60	4
3	Royal School of Engineering and Technology	Engineering and Technology	PG	Civil Engineering	24	4
		Engineering and Technology	PG	Mechanical Engineering	24	4
		Engineering and Technology	UG	Applied Electronics and Instrumentation Engineering	60	4
		Engineering and Technology	UG	Civil Engineering	120	4

		Engineering and Technology	UG	Computer Science & Engineering	60	4
		Engineering and Technology	UG	Electrical Engineering	60	4
		Engineering and Technology	UG	Electronics & Telecommunication Engineering	60	4
		Engineering and Technology	UG	Mechanical Engineering	120	4
4	Royal School of Business	Management	PG	Masters in Business Administration	120	2
5	NETES Institute of Technology & Science , Mirza	Engineering and Technology	UG	Computer Science and Engineering	60	4
		Engineering and Technology	UG	Electrical and Electronics Engineering	60	4
		Engineering and Technology	UG	Electronics & Communication Engineering	60	4
		Engineering and Technology	UG	Mechanical Engineering	60	4
6	Girijananda Chowdhury Institute of Pharmaceutical Science	Pharmacy	PG	Pharmaceutics	18	2
		Pharmacy	UG	Pharmacy	60	4
7	Guwahati College of Architecture	Architecture	UG	Council of architecture	30	5
		Architecture	PG	Council of architecture	20	2
		MPlan	PG	Council of architecture	20	2

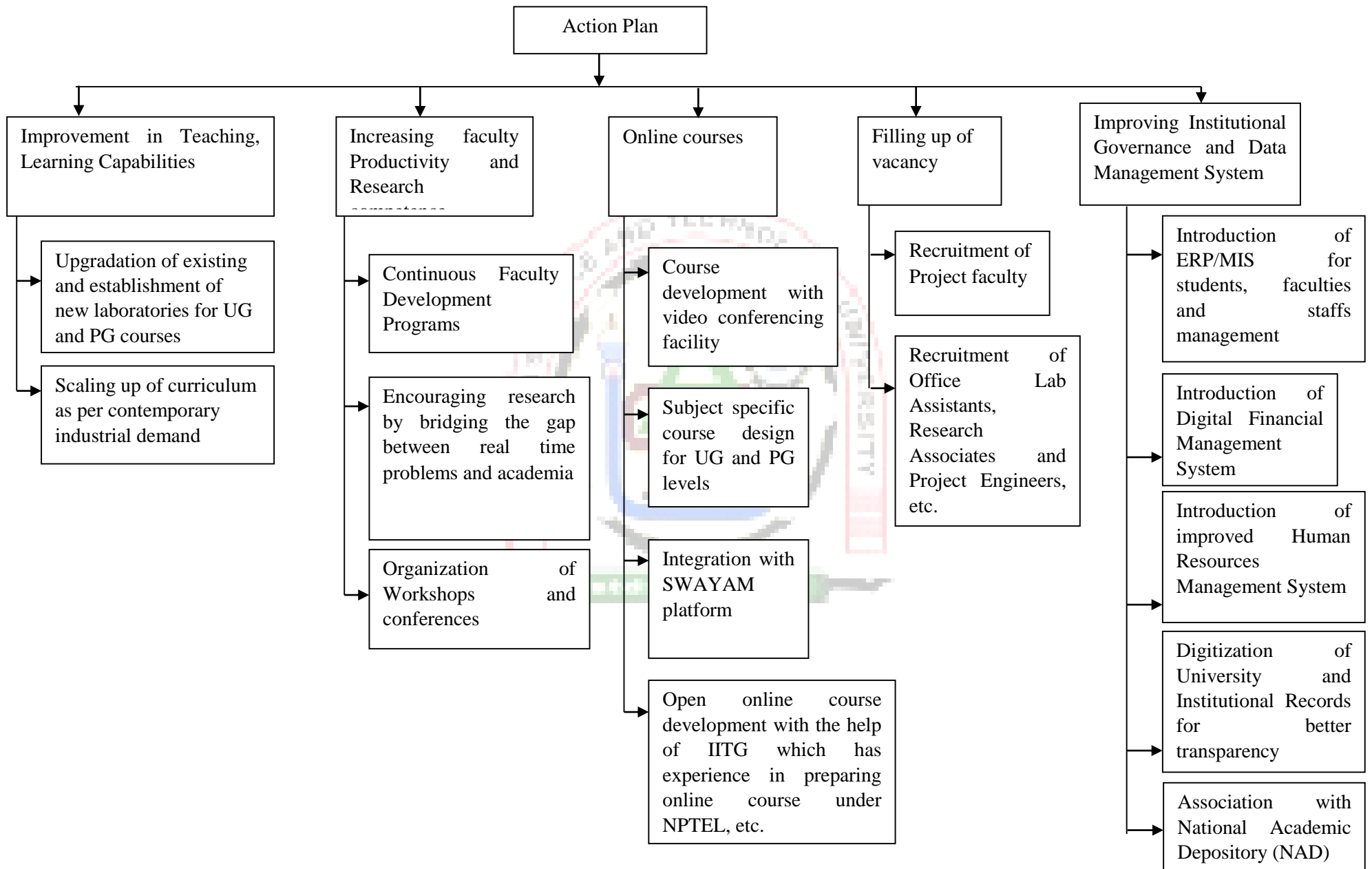
8	CIT Kokrajhar	Design	UG	Awaiting approval	20	4
9	Brahmaputra College	Science	UG	Applied Physics	25	3
		Science	UG	Computer Science	25	3
		Science	PG	Applied Physics	40	2

1.3 Plan for execution of activities of ATU with the affiliated institution

The TEQIP III benefits will be dissipated to the affiliated institution for achieving the outcomes of the programme. There are nine affiliating institutions under this university pursuing UG/PG/PhD courses where the facilities for research competence are not available. The TEQIP III funds will be diverted for bringing out specified changes in the activities like teaching learning competence developments, sponsor research, publications, faculty and staff training, curriculum review, improvement of faculty qualifications by higher studies, development of online courses, filling up of vacancies, improvement of institutional governance, ERP system, financial management, human resource system etc.



1.4 Schematic Diagram for Action Plan of Assam Science and Technology University under component 1.2 for ATU's



2. INSTITUTIONAL DEVELOPMENT PROPOSAL (IDP)

2.1 Introduction of IDP

1. **Objective** : As per the requirement of TEQIP-III program of NPIU for widening input through ATU is the focus states for various multi-disciplinary activities regarding improvement of teaching, learning, research activities and opportunities for affiliating institution.
2. **Scope** : The scope of the work is to widen the impact through 8 Nos. of ATU's who meets the enabling mechanism with various activities like procurement of goods and improvement of teaching, learning and research activities of the affiliated institutions. There are nine affiliating institutions teaching various multi-disciplinary subjects throughout the state of Assam performing under this University. The various areas of study are Civil Engineering, Mechanical Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Electrical Engineering, Computer Science and Engineering, Applied Electronics and Instrumentation Engineering, B.Pharm, B.Arch, B.Des at undergraduate level. The University is also conducting post graduate courses in MBA, MCA, M.Pharm, M.Tech in CSE, ECE, ICE and in Energy Engineering. There are 2 batches of PhD students numbering 30 in various discipline under this University.

3. Salient features of ATU's

Assam Science and Technology University as ATU of Assam has many aspects to be completed.

- There is a huge requirement for improvement of teaching mechanism and learning process of the students as per status of demand of the affiliating institutions.
- The research facilities and scopes are very limited as per as the infrastructure for research mechanism and other facilities are concerned.
- The ATU is planning to develop a Research Hub along with the affiliating institution under this University.
- Procurement of equipments, furniture, books, LR's, other minor items etc. are planned under TEQIP-III to be created centrally at the University, so that, it can be utilized by the affiliating institution as and when required.
- The ATU will be collaborating with the affiliating institute for improvement of teaching methodology, research methodology and gadgets for improvement of teaching and learning process.
- The methodology will include the following: -
 - Curriculum development.
 - Teaching, learning and evaluation.
 - Research, consultancy and extension.
 - Infrastructure and research development
 - Student support and progression.
 - Governance, leadership and management.
 - Innovation and best practices.
 - Resource mobilization for research.
 - Research publications and awards.
 - Consultancy service for internal revenue generation.
 - Library cum information centre

4. Deliverables:

The ATU's are expected to ensure the following deliverables: The Assam Science and Technology University will deliver the following variables with TEQIP III programme.

- Immense collaborative and applied research with facilities created.
- Funding for R&D activities on specified local problems.
- Creation of inductor chair.
- Patent filing and research publication
- Promotion of NBA/UGC/AICTE accreditations of courses.
- Faculty motivation and productivity for teaching and learning.
- Preparation of open online courses.
- Filling up of faculty vacancy.
- Development and applications through e-learning.
- Complete access to digital resources.
- Integration with Swayam.
- Improvement of Institutional governance.
- Improvement of student's employability.
- Creation of Research Hub.
- Providing research assistantship to Masters and Doctoral programs on selected topics.

5. Funding Pattern:

The University is mainly funded by the State Government in the nature of G.I.A (Grants-in-Aid) under plan budget/ Non plan budget which is received by the University in the end of a particular financial year. Till date of (this proposal), no grant has been received from UGC or other development agencies.

The TEQIP-III will be funded by NPIU under a national program meant for the 180 Government and Government funded Engineering Institutions and 10 ATU that will be selected under different sub component under two cycles.

6. The activities to be included under sub component 1.2: Improvement of teaching, learning and research competence of affiliated institutions.

Assam Science and Technology University will provide teaching, learning competence, its improvement in various spheres of academic infrastructure that may bring a combined effect as per the provision of action plan for ATU.

A central research facility in different disciplines of engineering is planned at ATU. The students of affiliating institution have been undergoing under-graduate, post-graduate and doctorate level of study. The need is for academic growth is highly demanded and a variety of components like laboratories, infrastructure etc. are required from University end.

The propose research facility will be designated as Centre for Professional Development (CPD) under Assam Science and Technology University (ASTU). The Researchers including students and faculties will be allowed to conduct the research at the central facility with latest equipment and central computing facilities that will be accessible to associated colleges.

The centre for professional development will be maintained by contract faculties selected from specified fields who will be engaged for activities of the CPD. Necessary facilities will be open for affiliating institution with centralized way.

The sub activities for new research hub are:

i. Improvement of teaching capabilities for better attachment levels in studies.

The teaching capacity improvement for faculties of affiliated institution can be taken up on need basis. The faculties of engineering and technology courses include disciplines like pure engineering, humanities, commerce, management, pharmacy, architecture, design etc. The faculties through experienced need a constant upgradation in their respective areas. Under TEQIP-III, Assam Science and Technology University is planning to undertake 6 modules of STTP (Short Term Training Program) of 5 days each for the selected faculties for improvement of teaching capabilities of the candidates.

ii. Schedule of training programs:

Please refer to Chapter 3 :Action Plan for Institutional Reforms

iii. Model Cost Estimate for training program:

Please refer to Chapter 3: Action Plan for Institutional Reforms and Annexure II

7. Increasing faculty productivity and motivation through a sponsored research and consultancy

- The sponsored research will be major activities for the University to actively concentrate on the key areas of study in selected topic as per requirement. Requirement. A research hub with an aim to start new master degree and doctorate program relevant to thematic area of river dynamic and plasma technology will be taken.
- Incubation center for different knowledge sharing of specified subject will be created under research hub.
- A technology transfer cell will be developed under this university for transferring the benefits to the society.
- Joint research and publication will be encouraged between the faculties of different institution.

2.2 Action Plan for scaling up PG and Research

Sl. No	Targets	Tentative completion timeline (in months)							
		1-6	7-12	13-18	19-24	25-30	31-36	37-42	42-48
1	Upgradation of existing PG laboratories								
2	Organization of workshops and conferences								
3	Scaling up of curriculum as per contemporary industrial demands								
4	Providing encouragement to the GATE qualified UG students for PG enrollment.								
5	Encouraging research by bridging the gap between real time problems and academia								
6	Establishment of new laboratories								
7	Continuous faculty development and training programmes								
8	Strengthening the Placement cell for placements after completion of course								
9	Personality development seminars for holistic growth								

2.3 Action plan for improving collaboration with Industry.

Sl. No	Targets	Tentative completion timeline (in months)								
		1-6	7-12	13-18	19-24	25-30	31-36	37-42	42-48	
1	Sharing testing facilities between Industry and University/Departments									
2	Professional consultancy by the faculty to solve industrial problems									
3	Encouraging engineers from industry to visit University to deliver guest lectures									
4	Creating scope for the PG/ PhD projects addressing industry problem									
5	Summer /Winter internship for students									
6	Participation of industrial experts in curriculum development									
7	Organizing workshops, symposia with joint participation of the industry									
8	MoUs between industries and university									
9	Sponsoring the labs by industries									
10	Scholarship/fellowship by industries									

2.4 Action plan for

2.4.1 Quantitatively increasing and qualitatively improving research by their faculty individually, jointly and collaboratively.

Sl. No	Targets	Tentative completion timeline (in months)							
		1-6	7-12	13-18	19-24	25-30	31-36	37-42	42-48
1	Academic collaborations with universities, industries and research organizations								
2	Continuously updating the learning resources with contemporary research works.								
3	Administrative provisions for upgrading faculty qualifications								
4	Creation of a Research Hub								
5	Performance evaluation by obtaining feedbacks from students								
6	Provisions for faculties to work collaboratively in consultancies								
7	Establishing faculty development fund								
8	Encouraging faculties with awards, advertisement et al recognitions.								
9	Imparting Pedagogical trainings								
10	Consistently increasing research papers publications in reputed journals								

2.4.2 Collaborating with Indian and foreign institutions in academic and research area through MoUs

Sl. No	Targets	Tentative completion timeline (in months)							
		1-6	7-12	13-18	19-24	25-30	31-36	37-42	42-48
1	MOUs will be signed with premier universities for collaborative research in areas of mutual interests								
2	Encouraging faculty members to communicate individually with foreign universities in areas of mutual interest								
3	Exchange of faculty and students with collaborating institutes								
4	Joint research project proposals								

2.5 Action Plan for training technical and other staff in functional areas

The TNA proposal for training of technical staff, administrative staff, finance staff, support staff and others has been prepared with the intention of enhancing their service delivery and personality development. The staff would undergo training in their respective area of interest.

2.6 The relevance and coherence of Institutional Development Proposal with State's/National/Industrial / Economic Development Plan.

The Institutional development proposal is consistent with the Economic Development plan of the central government and the state government. The 12th five-year plan largely focuses on education, infrastructure, and environment. TEQIP III project-objectives enumerate its impetus on improving quality and equity in engineering institutions of focus states which includes Assam. It aims at widening the scope of Affiliating Technical Universities like ours. This IDP tries to cover such focus areas and propose a holistic roadmap for achieving the targets. Higher emphasis is laid on research and development. The proposed Research Hub will provide for quantitative as well as qualitative research work in the field of Engineering and Technology. Advanced renewable energy technology research will strengthen the Sustainable Development Goals 2030 and India's intended nationally determined contributions under UNFCCC. IDP proposes Industry-Academia collaborations in near future which will push for cutting edge research and innovations.

The University proposes to upgrade learning by modernizing the classrooms, upgrading the library and plans to move towards digital resource based learning by encouraging MOOCs, integrating with Swayam platform and subscribing to e-journals/e-books. Thus, it is in coherence with central flagship programmes like Digital India. The IDP incorporates student-quality improvement strategies aiming at knowledge based as well as personality development which will assist them in improving their employability after completion of the course. Improvement of the laboratories and workshops will permit them to practice latest research techniques which will reflect in their project/research works and strengthen their resumes. Faculty development, training technical and other staff, improving the management system are included in the IDP.

2.7 Description of the institutional project implementation arrangements.

The project implementation will be carried out cohesively by the institution by segregating the targets under some committees, coordinated by the TEQIP coordinators and the 5 Nodal Officers. This will increase accountability and timely completion of the intended targets.

Sl. No.	Committee	Headed by
1	Student, faculty and staff development	Nodal Officer Academics
2	Industry-Academia interactions, Conferences	Senior Professor
3	Procurement of goods and services	Nodal Officer Procurement
4	Civil Works	Nodal Officer Civil works
5	Financial management	Nodal Officer Finance
6	Equity Assurance Plan Implementation	Nodal Officer Equity
7	Departmental task force, Institutional reforms, audit	TEQIP Coordinator

2.8 Departments/faculty in the proposal preparation and implementation.

The IDP has been constituted after continuous meetings participated by the college management including the faculties, technical, financial and other staff. The discussions have been open and inclusive. Everyone has dedicatedly contributed to the IDP and outlined the strategic objectives of the University. Subsequent to the meetings, departmental task forces were created for continuous follow ups.

2.9 Institutional Project Budget

Rs. In Crore

Sl. No.	Activities	Project life Allocation	Financial Year			
			2017-18	2018-19	2019-20	2020-21
1	Infrastructure improvements for teaching, training and learning through:					
	i) Establishment of new laboratories for new and existing PG programmes, faculty research, etc.	4 years	2.00	2.00	1.58	1.58
	(ii) Updation of learning resources	4 years	0.20	0.10	0.00	0.00
	(iii) Procurement of furniture	4 years	0.35	0.06	0.06	0.06
	(iv) Modernization and strengthening of libraries	4 years	0.60	0.11	0.11	0.11
2	Providing Teaching and Research Assistantships for significantly increasing enrolment in existing and new Masters and Doctoral programmes in Engineering disciplines	4 years	0.25	0.25	0.25	0.25
3	Enhancement of R&D and institutional consultancy activities	4 years	0.15	0.15	0.10	0.10
4	Faculty and Staff development for improved competence based on TNA	4 years	0.60	0.60	0.60	0.60
5	Filling up Vacancies	4 years	0.20	0.20	0.20	0.20
6	Institutional Management Capacity enhancement	4 years	0.20	0.20	0.10	0.10
7	Academic support for weak students	4 years	0.20	0.10	0.10	0.10
8	Incremental Operating Cost	4 years	0.09	0.09	0.09	0.09
	Grand total= 15.01 crores		4.74	3.18	3.05	3.04

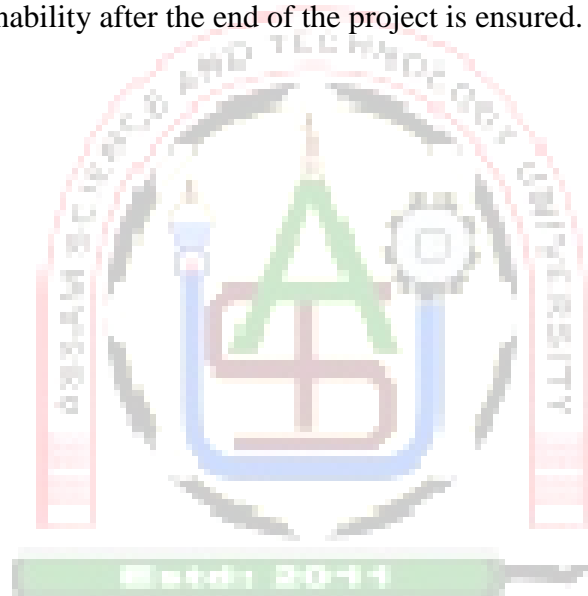
Note: The list of goods and services for procurement is given in Annexure V. The estimates will be further supplemented by proper plan document in due course.

2.10 Action plan for ensuring that the project activities would be sustained after the end of the project

The execution of the IDP will result in:

1. Students development with enhanced academic and non-cognitive skills, higher employability and entrepreneurial skills
2. Faculty and staff training
3. Recruitment of new faculty
4. Ameliorated Research culture
5. Industry -institute interactions
6. Institutional reforms on MIS
7. Establishment of new laboratories and modernizing the existing ones
8. Networking with premier national and International institutes
9. Internal revenue generation via Research Hub
10. Better academic results, publications and patents

It is evident that the project components will push the institution towards newer heights and hence the project sustainability after the end of the project is ensured.



3. ACTION PLAN FOR INSTITUTIONAL REFORMS

3.1 Improvement in teaching, learning and Research Competence of the institute.

3.1.1 Improving the teaching capabilities for better attainment levels in the studies

The rapid changes and increased complexity of today's world present new challenges and put new demand in teaching practices. There has been a growing demand of necessity to change and improve the preparation of students for productive functioning in the continually changing and highly demanding environment. In confronting these challenges, it is necessary to improve the teaching and learning ambience through upgradation of infrastructure facilities, improving teaching methodologies and faculty quality improvement program. The institute has decided to modernize and strengthening the existing laboratories and to establish new laboratories for new and existing UG and PG program. Classrooms will be modernized with smart boards and computer linked LCD projectors with screen, which would capture the better attention of the student than mere lecturing. PA system, Audio-Video conferencing facilities will be procured to improve learning facilities.

Library is a knowledge resource centre for an Institute. Upgradation of the library is vital for Centre of Excellence(CoE). For upgradation of the library, a comprehensive collection of books, journals and reference materials (in print and electronic form), proceeding of conference and seminars and other relevant equipments will be procured. Furniture will be procured for establishment of new laboratories and knowledge centre (library).

3.1.2 Increasing faculty productivity and motivation

(i) Faculty Development Program (FDP):

Subject knowledge upgradation as well as upgradation of qualification of faculties is essential for achieving the objectives of CoE to trigger an R&D culture in the institution through collaborative sponsored research, publications, conference, innovations, patents and PhD enrolments.

To improve productivity of faculties, they will be encouraged to participate in seminars, conferences and workshops, both National and International organized by the institute and other organization, short term research visit to laboratories/ institutions. Faculties will be encouraged to establish collaboration with academic institute and R&D organization within and outside the country through MoUs

Faculties will be encouraged to improve and strengthen their teaching capabilities through quality improvement programs. They will be encouraged to upgrade their qualification.

The technical non-teaching staff will be trained in order to enable them in handling new technologies and equipments. Such training may be provided with a certain frequency to keep them in touch with latest trend in the industry.

Table: Faculty & Staff Development Plan for the first 18 months

Sl. No.	Tentative days	Duration	Title	Approx. cost(Rs)
1	April, 2017	1 week	Research Methodology: Concepts and tools	2,50,000
2	May, 2017	1 week	Mathematical modeling and Computer simulation	2,50,000
3	June, 2017	1 week	Computational, Applied and Experimental Mechanics	2,50,000
4	July, 2017	2 days	Workshop on Solar photovoltaic: Fundamentals, Technologies and Applications	8,00,000
5	August, 2017	1 week	Staff training on National Academic Depository	1,00,000
6	September/October 2017	3days	National conference (Topic to be decided)	10,00,000
7	November, 2017	1 week	FDP on civil engineering	2,50,000
8	December, 2017	1 week	FDP on computer science and engineering	2,50,000
9	January/February, 2018	3days	International Conference (Topic to be decided)	30,00,000
10	March, 2018	1 week	FDP on Pharmaceutical Science	2,50,000
	Total			54,00,000

Note: The other training programmes for the future period of the project will be decided in due course

(ii) Enhancement of research and consultancy activities:

Institutions need to market their services to industry. Faculties who have expertise will be encouraged to take up consultancy assignments and to complete them timely and successfully, which will directly and indirectly benefit the institution, faculty and students. This will boost the internal revenue generation (IRG) of institution. The UG and PG students will be encouraged to involve in industry oriented /sponsored research program to increase their interest in higher education and research.

(iii) Review curriculum and examination:

The main purpose of the revision of curricula and syllabi is to effectively prepare students to meet the labor market requirements. The curricula and syllabi will be reviewed by the competent authorities of the institute involving the experience faculties of the esteem affiliated institutions of the region and the people from core industry.

3.2 Preparation of massive open online courses

Online courses will be designed for the benefit of the students of the university which may be made available to the affiliated colleges through websites. Ideas and concepts for developing such course materials may be obtained from IIT, Guwahati which has enough experience of preparing online courses under NPTEL programs. The courses will be designed as per the requirement of curriculum for various courses designed for different UG and PG courses. The faculties involve in preparing such courses will be suitably encouraged.

3.3 Filling up of vacancy

The university positions for various faculties are not always approved by the appropriate government authority. The project requirement for various faculties at different ranks may be filled by adopting suitable methods from the project expenditure under TEQIP-III. The positions of laboratory assistants may also be approved under TEQIP-III.

3.4 Improving institutional governance

The institution is governed by traditional methods of governing. For proper implementation and monitoring of the project, the institutional governance will be improved by forming various governing committees at different levels. The digital concepts will be applied when necessary with proper use of softwares and other devices. The benefits will be channelized to the affiliated colleges. The transparency of the governance process will be reflected at every stage of management.

3.5 Improving Data management and Administration

To identify the gaps in learning process and to bridge the same by additional reinforcement at certain interval, University is thinking of use of ERP an internal on-line testing can be integrated with the system and also every stake holder can be informed about his profile.

4. ANNEXURE I

Setting up of a Central Research Facility

Justification: The setting up of this new laboratory with state of art technology equipment will help students doing all range of experiments in different field of science and technology. Design of new experiments for both UG and PG levels within the current syllabi would become possible once this laboratory has been set up. Students belonging to UG, Post Graduate and Ph. D levels of this Institute will be able to carry out cutting edge research as well as laboratory experiments in different field of science and technology. The proposal has got the following objectives:

- Objectives:**
1. To enhance functional efficiency of the Institution for teaching, training and research and consultancy purposes
 2. To facilitate the students (BE, ME and PhD) to do research in the area of science and technology.
 3. To generate facilities for the institute to carry out R&D and consultancy works.

List of proposed major Equipments for Central Research Facility

SI No	Description	Unit price (Rs) Approx
(i) ENERGY LABORATORY		
1	Diesel test rig	9,00,000
2	Rotary viscometer	85,000
3	Automatic titrator	1,00,000
4	Karl Fischer titration apparatus	1,00,000
5	Cloud and pour point apparatus	1,50,000
6	Copper strip corrosion test apparatus	2,00,000
7	Oil foaming characteristics apparatus	50,000
8	Water bath	1,00,000
9	pH and conductivity meter	1,00,000
10	Ash fusion determinator	10,00,000
11	Hot wire anemometer with probe	19,00,000
12	Stress tester	2,00,000
13	High temperature indentation	3,00,000

14	Solar lab equipments	5,00,000
15	GC-MS	10,00,000
16	LC-MS	15,00,000
17	FTIR	10,00,000
18	AFM	5,00,000
19	Fluorescence Microscope	2,00,000
20	XRD	3,00,000
21	UTM	15,00,000
22	Industrial Wind Tunnel	70,00,000
23	CHNS analyzer	3,00,000
24	Surface roughness tester	1,00,000
25	Universal oven	50,000
26	Solar concentrator with pyranometer	3,00,000
27	Oxidation Stability apparatus	15,00,000
28	Rotary evaporator	2,00,000
Total		2,11,35,000
(ii) TRIBOLOGY LABORATORY		
29	Reciprocating friction tester	5,00,000
30	Pin-on-disc type wear and friction tester	5,00,000
31	Slurry erosion tester	5,00,000
32	Dry abrasion tester	5,00,000
33	Journal bearing with manometer	1,00,000
34	Break lining friction test rig	4,00,000
35	Journal bearing apparatus with digital pressure indicator	2,00,000
36	Friction and wear test rig	3,00,000
37	Bearing analyzer	3,00,000
38	Friction in journal bearing apparatus	3,00,000
39	Four Ball Tester	3,00,000
40	High Frequency Reciprocating Rig	5,00,000
41	Reichert tester	5,00,000

42	Shear Stability Tester	5,00,000
43	High Temperature Grease Tester	5,00,000
44	Roller Element Bearing Tester	5,00,000
Total		64,00,000
(iii) PLASMA RESEARCH LAB		
45	Power amplifier	2,00,000
46	Oscilloscopes	1,50,000
47	Impedance Analyzer	3,00,000
48	Multimeter(2pieces)	1,00,000
49	Vacuum pump (3 pieces)	1,50,000
50	High voltage power supply	10,00,000
51	LOW voltage power supply	12,00,000
52	High power microwave generator at GHz frequency	25,00,000
53	High power RF amplifier	20,00,000
54	Microwave discharge tube	4,00,000
55	High voltage impedance analyzer	30,00,000
Total		1,10,00,000
(iv) MANUFACTURING AND MATERIAL SCIENCE LAB		
56	Development of an air conditioned room of size (20 feet ×20 feet) with vinyl flooring in the existing building	10,00,000.00
57	Automatic multi specimen Grinder/Polisher machine with accessories	10,00,000.00
58	Dual automatic Precision diamond sectioning machine with accessories	10,00,000.00
59	Automatic specimen mounting press with accessories	3,00,000.00
60	Micro Hardness Tester	15,00,000.00
61	Upright Optical Microscope with software, computer	32,00,000.00
62	1500°C tube furnace	18,00,000.00
63	High temperature muffle furnace	20,00,000.00
64	Table top Scanning Electron Microscope with EDS facility	55,00,000.00
65	Sputter coater	4,00,000.00

66	High Purity (99.9%) argon cylinder	15,000.00
67	Vacuum (diffusion) Pump (2 Numbers)	1,50,000.00
68	Spex ball milling machine	12,00,000.00
69	EDM Machine	18,00,000.00
70	ECM machine	20,00,000.00
71	Cutting force measuring dynamometer (Kistler make)	8,00,000.00
72	Lathe, milling	35,00,000.00
73	Universal Milling Machine	45,00,000.00
74	Ultrasonic Flaw Detector, Make: Modsonic Instruments Mfg Co(P) Ltd., Ahmedabad	5,00,000.00
75	Surface Measurement (Pocket Surf) make Mahr, GMBH	2,00,000.00
76	Miscellaneous laboratory items, cutting tools, etchants etc	4,00,000.00
Total		3,27,65,000

Total Equipment Expenditure		
Sl. No.	LABORATORY	AMOUNT (Rs)Approx
1	Energy	2,11,35,000
2	Tribology	64,00,000
3	Plasma	1,10,000,00
4	Manufacturing & Material Science	3,27,65,000
Grand Total (i+ii+iii+iv)		7,13,00,000

ANNEXURE-II

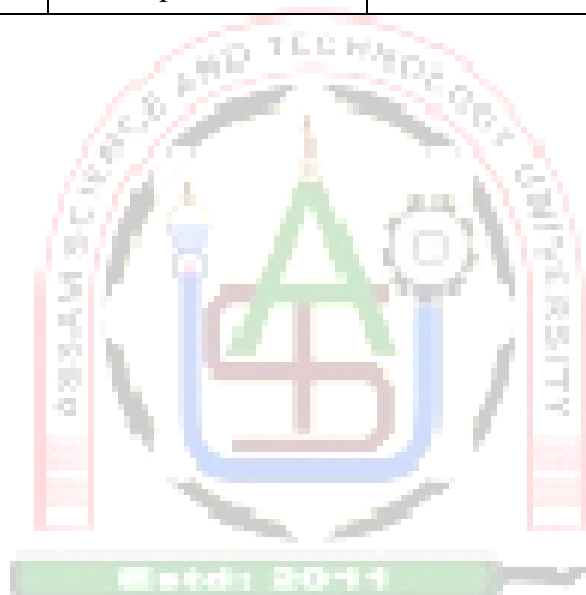
Model Expenditure for STTP (1 week)

Title – Research Methodology: concepts and tools Code- TEQIP/2017/01 Month- April, 2017 Duration- one week (Monday to Friday) Total participate - 40				
Sl.No	Purpose	Rate	Quantity	Amount (Rs) Approx
1	Honorium to resource person	@max Rs 3000 each	12	36000
2	Honorium for organising			
	* Co-ordinator	@Max Rs 5000 each	3	15000
	* Ancillary staff	@Rs 400 each	2	4000
	* Ancillary staff-IV	@Rs 200 each	2	2000
3	Registration kit	@Rs 300 each	40	12000
4	Logistic arrangement-I (Inaugural and valedictory functions and photography)			5000
5	Logistic arrangement-II (printing, photocopy paper, stationary, mementoes to experts and organizer contingencies consumables and office expenditures etc)			15000
6	Hospitality expenditure			120000
7	TA for expert			40000
Total				249000

ANNEXURE-III

Manpower Requirement for conducting TEQIP-III programmes.

Sl No	Position	Fixed remuneration in Rupees	Responsibility
1	OSD	25,000/pm	Overall implementation of the project, will report to Nodal officers and Co-ordinator.
2	Jr Admin officer- 2 nos	20,000/pm	Overall administration matters
3	Computer Operator/ Junior Assistant. -2nos	18,000/pm	Computer operation, office works related to administration, purchase etc.
4	Helpers	8,000/pm	To execute office works.
	Total	71,000/pm	



ANNEXURE-IV

Procurement of Goods

Purpose	Sl. No.	Items	Quantity	Approx. Cost(Rs)
(i)Equipments	1	Projector	02	1,50,000
	2	PA system for conference room	1set	3,00,000
	3	Audio-video recorder for Auditorium	1set	10,00,000
(ii)Furniture	4	Class room desk and bench	30	3,00,000
	5	Furniture for Academic staff	-	2,00,000
	6	Furniture for Supporting staff	-	2,00,000
	7	Almirah	-	3,00,000
(iii)Books	8	Textbooks	-	20,00,000
	9	Reference books	-	10,00,000
	10	e-journals	-	50,00,000
	11	print journals	-	20,00,000
(iv)LR'S	12	Work station	02	3,00,000
	13	Normal desktop	30	9,00,000
	14	Lab set up	10	10,00,000
(v)Software	15	HOMER, WAPS, PB. SYST	-	15,00,000
	16	ANSYS	-	10,00,000
	17	ERP	-	5,00,000
Total				1,76,50,000
