1.1 Institutional Identity

- Name of the institution : **JNTUH Institute of Science and Technology**
- Is the Institution AICTE approved? : **Yes**/~~No~~
- Furnish AICTE approval no. : **F.No AP-18/BOS(PG)/91 (Applied on 29/03/2010 Uniq ID No: 1-M9A5F)** **(Enclosed in Annexure -I)**
- Type Of Institution : **Govt. funded**
- Status of Institution: Autonomous Institute as declared by the University. It is a constituent academic unit of Jawaharlal Nehru Technological University Hyderabad. **(Enclosed in Annexure –II A)**
- Degree awarding University: **Jawaharlal Nehru Technological University Hyderabad, Kukatpally, Hyderabad.**
- Names of Head of Institution and Project Nodal Officers

Head & Nodal Officer	Name	Phone Number	Mobile Number	Fax Number	E-Mail Address
Head of the Institution	Prof. A. Jayashree	040 23156128	8008103809	040 23058729	jayashreeanireddy@gmail.com, jayashree@jntuh.ac.in

Project Nodal Officers for:

Academic Activities	Dr. Archana Giri	040 23156128	9849028367	040 23058729	archanagiriin@yahoo.co.in
Civil Works including Environment Management	Prof. K. Ramamohana Reddy	040 23156128	9394701133	040 23058729	cejntuh@rediffmail.com
Procurement	Prof. M.Lakshmi Narasu	040 23156128	9490173899	040 23058729	Mangamoori@rediffmail.com
Financial Aspects	Dr. M.V.S.S. Giridhar	040 23156128	9440590695	040 23058729	mvssgiri@yahoo.com
Equity Assurance plan	Dr.K.Venkateswara Rao	040 23156128	9440858664	040 23058729	Kalagadda2003@yahoo.com

1.2 Academic Information

Engineering Programmes offered in Academic year 2009-10

S.No	Title of Programme	Level (UG, PG, PhD)	Duration (Years)	Year of starting	AICTE Sanctioned Annual Intake	Total Student strength
	Ph.D Programmes (Annexure –III)					
1	Water Resources	Ph.D	3+	1984	Not Applicable	05
2	Bio Technology	Ph.D	3+	1989		18
3	Environmental Management	Ph.D	3+	2000		25
4	Spatial Information Technology	Ph.D	3+	2002		05
5	Nano Technology	Ph.D	3+	2009		00
	M.Tech Regular Programmes					
6.	M.Tech in Environmental Management	PG	2	2000	25	38
7.	M.Tech in Environmental Geomatics	PG	2	2002	25	34
8.	M.Tech in Bio Technology	PG	2	1989	25	43
9.	M.Tech in Geo-Informatics and Surveying Tech	PG	2	2002	25	33
10.	M.Tech in Spatial Information Tech.	PG	2	1992	25	37
11.	M.Tech in Water & Env. Technology	PG	2	1984	25	34
12.	M.Tech in Nano Technology	PG	2	2007	25	48
	M.Tech Part Time Programmes (The intake indicated here has not been used for other calculations)					
13.	M.Tech in Environmental Management	PG	3	2000	30	83
14	M.Tech in Remote Sensing and GIS	PG	3	2002	30	68
15	M.Tech in Bio Technology	PG	3	2000	30	76
16	M.Tech in Water Environmental and Technology	PG	3	2008	30	42
17	M.Tech in Bio Technology(Pharmaceutical Bio Technology)	PG	3	2002	30	84

Accreditation Status of UG Programmes:

Title of UG Programmes being offered	Whether eligible for accreditation or not	Whether accredited as on 31st Dec.2009	Whether "Applied for" as on 31st Dec 2009
The Institute does not offer any under graduate programmes.			

Accreditation Status of PG Programmes: (Enclosed in Annexure –IV)

Sl. No	Title of PG Programmes being offered	Whether eligible for accreditation or not	Whether accredited as on 31st Dec.2009	Whether "Applied for" as on 31st Dec 2009
1	M.Tech. in Environmental Management	Yes	No	Yes
2	M.Tech. in Environmental Geomatics	Yes	No	Yes
3	M.Tech. in Bio Technology	Yes	No	Yes
4	M.Tech in Geo-Informatics and Surveying Tech.	Yes	No	Yes
5	M.Tech.in Spatial Information Tech.	Yes	No	Yes
6	M.Tech in Water & Env. Technology	Yes	No	Yes
7	M.Tech. in Nano Technology	Yes	No	No

1.3 Faculty Status (Regular/On-Contract Faculty as on December 31st, 2009)

Faculty Rank	No. of Sanctioned Regular post	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						
		Engg. Discipline		Other Discipline		Engg. Discipline		Other Discipline		Engg. Discipline		Other Discipline				
		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	15=(3+5+7+9+11+13)	16=(2-15)	17+(4+6+8+10+12+14)
Prof	07	2		5										07		
Assoc Prof	08	2		3		2								07	01	
Asst Prof	07	1	3			3								07		
Lecturers			1		2		4		21							28**
Total	22	05	04	07	02	05	04	01	21					21	01	28

***One Assistant and one Associate professor are on deputation in CCST.**
**** We have 28 lecturers on contract basis which is above the sanctioned strength for conducting of practical classes and evaluation and for other programmes.**

1.4 Baseline Data

S.No	Parameters	
1	Total strength of students in all programmes and all years of study in the year 2009-10 (List enclosed in Annexure –V)	267
2	Total women students in all years of study in the year 2009-10	92
3	Total SC students in all programmes and all years of study in the year 2009-10(List enclosed in Annexure –V)	53
4	Total ST students in all programmes and all years of study in the year 2009-10(List enclosed in Annexure –V)	11
5	Total OBC students in all programmes and all years of study in the year 2009-10(List enclosed in Annexure –V)	50
6	Number of fully functional P-4 and above level computers available in library for UG & PG students in the year 2009-10	206
7	Total number of syllabus Text books and Reference books available in library for UG & PG students in the year 2009-10	58,716
8	% of UG students placed through campus interviews in the year	Not offering
9	% of PG students placed through campus interviews in the year	20%
10	% of High quality undergraduates (>75% marks) in the year 2008-09	Not offering
11	% of High quality postgraduates (>75% marks) in the year 2008-09	54
12	Number of research publications in Indian refereed journals in the year 2009-10	
13	Number of research publications in International refereed journals in the year 2009-10	
14	Number of Patents obtained in the year 2008-09	NIL
15	Number of Patents filed in the year 2008-09	02
16	Number of sponsored research projects completed in the year 2008-09	10
17	The transition rate of students in percentage from 1st year to 2nd year in the year 2008-09 for: (i) all students – (ii) SC (iii)ST (iv)OBC	 **90%** **85%** **90%** **90%**
18	IRG from students fee and other charges in the year 2008-09 (Rs. in lacs) (Enclosed in Annexure –VI)	281.58
19	IRG from commercialization of R & D projects, consultancy & other sources in the year 2008-09 (Rs. In lacs) (Enclosed in Annexure –VI)	207.36
20	Total IRG in the year 2008-09 (Rs. In lacs)	488.94
21	Total recurring expenditure in the year 2008-09 (Rs.in lacs) (Enclosed in Annexure –VII)	117.717

1.5 Institutions to be eligible for participation in the project under the sub-component 1.2 must fulfill the following benchmarks:

S.No.	Attainment Parameters	Bench-mark values	Institution's response (Yes/No)
1	Does the Institution agree to implement all the academic and non-academic reforms given as below:	Yes	Yes
	▪ Implementation of curricular reforms	Yes	Yes
	▪ Exercise of corpus Fund, Faculty Development Fund, Equipment Replacement Fund and Maintenance Fund	Yes	Yes
	▪ Generation, retention and utilization of revenue generated through variety of activities	Yes	Yes
	▪ Institutions to fill-up all existing teaching and staff vacancies	Yes	Yes
	▪ Delegation of decision making powers to senior functionaries with accountability	Yes	Yes
	▪ Improve Student Performance appraisal of faculty by students	Yes	Yes
	▪ Provide faculty Incentive for continuing education (CE), consultancy and R&D	Yes	Yes
	▪ Obtaining accreditation	Yes	Yes
2	Availability of academic autonomy as recognized by UGC for both UG and PG programmes (Enclosed in Annexure –II B)	Yes	Yes Applied for autonomy
3	Presence of Board of Governors with an eminent academician or industrialist as the Chairperson (Enclosed in Annexure -VIII)	Yes	Yes
4	Percentage of eligible UG programmes accredited or applied for	60%	Not offering UG programmes
5	Percentage of eligible PG programmes accredited or applied for (Enclosed in Annexure -IX)	40%	86% Applied for
6	Cumulative number of Ph.D's produced in the last three academic years (2006-07, 2007-08,2008-09) Or Cumulative number of MTech. produced in the last three academic years (2006-07, 2007-08,2008-09)	5 50	128 (List Enclosed in Annexure VIII) 255 (List Enclosed in Annexure IX)
7	Faculty positions filled on regular full time basis as percentage of total faculty positions sanctioned in accordance with the AICTE prescribed student to faculty ratio	65%	95%
8	Percentage of regular faculty with PhD in engineering as percentage of total faculty	15%	55.56%

INSTITUTIONAL DEVELOPMENT PROPOSAL (IDP)

2.1 Executive summary of the Institutional Development Plan

Institute of Science and Technology has been engaged in offering Post Graduate programmes in Technical Education and research for the last 20 years. The primary objective of the Institute has been to generate more human resources for industry and academia. As our objective matches with that of project objectives and that of Government of India, it is felt that it is appropriate to seek funding under the project.

Since we are already involved in research in the areas of Hydrogen energy, remote sensing and GIS applications, Plant Biotechnology and Animal cell culture Technology, microbial Biotechnology, Water Resource Management and hydrology, and as we also have a moderate level of Industry Institute Interaction, we would like to scale up the activities under this project.

Therefore the following have been proposed in IDP.

- To establish two new M.Tech courses "Bio-Process Engineering" and "Chemical Technology" with an intake of 25 each by July, 2011.
- Establishment of four new laboratories one in Nano electronics and Nano biotechnology in CNST, Chemical Engineering labs in CCST, water quality lab in CWR and Photogrammetry and Digital Photogrammetry Lab in CSIT before April, 2011.
- Modernization of one lab in each of the centres- Downstream processing Lab(CBT), Characterization lab, Advanced Chemical Engineering Lab (CCST), Geophysical and Surveying Lab(CSIT), Water Resources Modeling and simulation lab(CWR) and GNSS and Geodetic lab(CEN) .
- Faculty training both in India and abroad to gear up to the current challenges in advanced and upcoming technologies
- Continuing to care for academically weak students by conducting remedial classes, organizing personality development programmes and special coaching as per their requirement.
- Establishment of an Industry Institute Partnership Cell (IIPC) for enhancing collaborative research and process development.
- To increase the number of M.Tech's to 900 from the present value of 255 and the number of PhD's to 278 from the present figure of 128 by the end of the project period.
- To offer Teaching Assistantships (TA) to PGCET, non-GATE and non-sponsored M.Tech. students and Research Assistantships to PhD students from next academic year on par with AICTE scholarships.
- To ensure that all students and faculty in the Institute have equal opportunity to avail the benefits of the Project with substantial improvement in the performance of weak students.
- The institutional budget for various activities has been allocated as 1.212, 5.249, 2.332, 2.117 and 1.217 crore for the financial years 2010-11, 2011-12, 2012-13, 2013-14 and 2014-15 respectively with a total project outlay of Rs.12.49 crore.

2.2.1 Details of SWOT Analysis

SWOT analysis was carried out initially at department level with a departmental committee along with faculty (regular and ad-hoc numbers varying from 6-10 depending on the faculty strength), staff and non-teaching staff (8-10 in each centre) and students (10 in each Centre). Then it was reviewed by outside academicians, industrialists along with alumni of the Institute. Finally, after collecting all the SWOT analysis reports at the departmental level, consolidation of overall institutional Strengths, Weaknesses, Opportunities and Threats has been carried out by a meeting of all the faculty members of the Institute and the SWOT report at Institute level was prepared. The SWOT analysis presented here is the result of at least three meetings at the departmental level followed by two meetings at the institutional level by involving all the stake holders. The views expressed have been consolidated and presented below.

2.2.1(a) Strengths of the Institute

1. **Strong research culture:** The Institute has a very strong research culture that is indicated by the high number of publications (327) and the number of ongoing R&D projects (33) for faculty strength of 21.
2. **Networking with industries and other academic institutions:** The Institute has interactions with different institutions and industries for collaborative research and for joint PG projects that is reflected in its publications (142 joint publications and 29 joint PhDs).
3. **Strong and active external boards for regular syllabus revision:** All the syllabi are revised periodically once in two years for inclusion of current developments by a BOS consisting of academicians and industry representatives. The revised content of syllabus varies anywhere between 10 and 20%.
4. **Highly qualified dynamic and competent faculty:** At present we have faculty strength of 21 of which 16 are PhD holders. Among the nine faculty members with engineering background five hold a PhD degree.
5. **Ability to organize workshops, conferences and seminars:** During the last three years sixty eight conferences were organized.
6. **Strategic location of the university:** The Institute's central location where many heavy, medium and small scale industries and R&D labs are located facilitates collaboration, interaction and exchange of expertise.
7. **Multi-background entry for admission into PG programmes:** The multidisciplinary nature of courses offers the flexibility in entry qualification facilitating admission to all successful aspirants for Post Graduation in engineering and Technology.
8. **Sharing of resources:** The facilities are made available to students, from other departments and also to students of other institutions for their project work. Even the faculty members are involved in guiding B.Tech student's projects from affiliated colleges and other institutions, thus ensuring extension of the benefits of TEQIP-Phase - I to other institutions.

2.2.1(b) Weaknesses of the Institute

1. **Inadquate resouces for recruitment:** The Institute does not have adequate number of state government sanctioned posts for offering a wide choice of specializations.
2. **Lack of support staff for maintaining departmental facility:** The strength of Technical support staff needs to be improved for proper maintainance of laboratories.
3. **Lack of adequately developed infrastructure for PG programmes and research in certain specified areas:** At present there is insufficient infrastructure in certain specialized areas for taking up research and for PG training.
4. **Lack of adequate e-learning/teaching material:** The Institute has an e-library with 1030 number of books, but it is still short of the required number. Also, at present we do not have any e-learning material.

5. **Lack of expertise in certain specialized areas:** Although the faculty members of the Institute are doing well in their chosen areas, they still do not have the expertise in certain specialized areas that are of relevance to the Industry (for example if the expertise available with a single faculty member is in the areas Bio transformations, Cancer Biology but it would benefit the centre immensely if the same faculty member had an experience in Microarrays that is one of the latest methods of studying and analyzing certain processes. Similarly for the other faculty members)

2.2.1(c) Opportunities of the Institute

1. **Locational advantage:** The location of our Institute at Hyderabad offers us the advantage of being able to interact with several industries and research organizations thereby helping our students to have enhanced career opportunities.
2. **More R&D funding:** The faculty of the Institute is in a position to attract more R&D funding due to their expertise in the areas of microbial biotechnology, biotransformations, Hydrogen energy, plant biotechnology, GIS, and remote sensing and water resources and also their willingness to work for long hours.
3. **Interactions with different Universities and industries:** Hyderabad is a hub for industries and with the introduction of foreign Universities bill, there is a possibility for greater collaboration and increased opportunities. We already have a MOU with Northumbria University and are utilizing this opportunity of starting a joint Master's Programme in Biotechnology.

2.2.1 (d)Threats of the Institute

1. **Fast paced changing of Technology:** Rapidly evolving Technologies can pose a real threat leading to obsolescence.
2. **Competition from other universities:** We have competition from premier institutions like the IIT's and NIT's as these have central funding and good faculty strength. The foreign University bill has opened up large number of threats to many of the universities in our country. We may therefore be taken over by the relatively strong international players.
3. **Delayed release of grants:** Another possible threat would be that the Institution might have financial problems due to delays in release of government grants and fee reimbursement schemes of the Govt. of Andhra Pradesh.
4. **Political threats:** At times, turmoil within a state due to political situation will adversely affect the functioning of the Institute and causes delay in keeping up with targets.

A systematic SWOT analysis has given us a clear understanding of our strengths and weaknesses as a result of which we have been able to analyze and chalk out clear plan for improved functioning of the Institute

2. 2.2 Strategic Plan for Institutional Development:

2.2.2 (a) How our strengths can be used for improvement:

The strong research culture and the networking with industries (coupled with our strategic location) and other academic institutions will help us secure more R&D funding and attract consultancy projects. The regular revision of syllabi of all our PG programs with the involvement of industry representatives enhances the quality of academic content. The organizing of seminars workshops and conferences give a certain degree of exposure to students. The dedicated involvement of our faculty in imparting knowledge leads to better quality of outgoing graduates. Our policy of sharing our resources will also enable us to build goodwill that is in tune with the state's policy of handholding, extending the benefits of TEQIP-I to other Institutions. All these steps will ensure improvement in educational standards.

2.2.2 (b) How to overcome weaknesses:

Training of faculty in areas of need and recruitment of key additional staff for enhancing the strength of the existing faculty for the existing as well as for the new Post graduate

programmes proposed will help us in building a faculty base. The faculty with specialization in the areas of Institute's requirement would be recruited with funding from TEQIP. Government's approval will be sought for continuation of these posts before the end of project period. Similarly the support technical staff would also be recruited and their services would be continued even after the end of the project period. Laboratory infrastructure will be developed to strengthen the existing facilities for carrying out research in certain specified areas. Adequate e-learning material would also be procured for adding up resources to the existing e-library. These steps will help us in overcoming our weakness.

2.2.2 (c) How to grab opportunities:

We will exploit our research capabilities for attracting better funding both at individual level and on a collaborative mode. Our University's MOU in making our Institute a partner for offering Joint academic programmes with foreign universities will ensure better quality while giving the students an international exposure and a good opportunity for the Institute to improve upon itself.

2.2.2 (d) How to overcome threats:

The competition from other Universities can be overcome by entering into MOU's with foreign Universities for offering of joint academic programmes thus eliminating the threat of being sublimated. The problem of reduced government funding from govt.'s side should be addressed separately. To make up for this, one needs to generate internal resources by attracting foreign students as we have started doing now. Another strategy would be to attract more consultancy funds.

2.2.3 Challenges for implementation of strategic plan:

Delayed approvals from regulatory bodies can be a challenge. Changes in political atmosphere leading to unrest and agitations can cause delays. Footloose attitude among the staff that can be countered by providing an encouraging environment and inculcating a sense of belongingness.

2.2.4 State the vision, mission and values of the institution.

Vision of the Institute

- Get recognized as an Institute that offers good quality teaching and carries out world-class research.
- Achieve the status of becoming the most preferred destination for best students, teachers and researchers.
- Build productive partnerships to elevate and broaden the size and status of our Institute.
- Produce committed people with appropriate knowledge and skills with a mission to serve

Mission of the institute

- To offer M.Tech Programmes in different disciplines of Technology
- To enhance the professional competence and research capabilities of faculty
- To increase the overall competence of all the staff by getting them trained
- To impart personality development and soft skills to the students
- To increase the standards of Education
- To start new M.Tech.Programmes

Values of the institution

- To provide ethical and value based technical education which is becoming important in the intensely competitive world.

2.3 Specific objectives and outcome of the proposal in terms of, "Scaling-up Postgraduate Education, Demand Driven Research & Development and Innovation"

The specific objectives are:

- To start two new M.Tech courses namely Bioprocess Engineering at Centre for Bio-Technology and Chemical Technology at Centre for Chemical Science and Technology.
- To produce additional 900 M.Techs during the project period with teaching assistantships for non GATE students
- To attract more and better qualified students for PG programmes.
- To improve the quality and relevance of the existing as well as new PG programmes
- Training of faculty for increasing their expertise
- Modernization of existing laboratories
- Establishment of new labs
- Organizing guest lectures, encouraging student and faculty participation in workshops/seminars/ conferences and training programmes at National and International level
- Regular revision the syllabus of M.Tech Programmes with special emphasis on industry relevant emerging technologies
- To improve qualifications of Seven PG level faculty by encouraging them to acquire a Ph.D degree.
- To increase the intake of Ph.D scholars and produce 278 Ph.D's with research assistantships
- To train support staff in improving their performance so as to enhance the efficiency
- To ensure that all students and faculty in the Institute have equal opportunity to avail the benefits of the Project with substantial improvement in the performance of weak students.

The expected outcomes of the proposed project are:

- **Availability of trained faculty**
- **Higher number oh M.Tech.s**
- **Strengthening of P.G.programmes**
- **Revamping of existing courses**
- **Making the courses more attractive**
- **Attracting quality students**
- **Increased employability of the students**
- **Increased interaction with Industry**
- **Increased industry orientation**
- **Demand driven RDI**
- **Ability to provide Technological solutions**

2.3.1 Justification for the institution's participation in Sub-component 1.2 based on the strengths and opportunities as per SWOT analysis

Our Institute has participated in TEQIP –Phase –I and has been ranked 20th at the National level in the impact evaluation report by NPIU, New Delhi.

- The Institute has been offering M.Tech. Programmes in emerging areas of engineering and technology since 1989. The Institute was primarily established exclusively for PG and PhD programmes.
- Since then, the faculty memebers have been striving to give their best with equal focus on teaching and research. Apart from teaching
  - The Institute has till now successfully completed 27 research projects since last Five years sponsored by various funding agencies like DST, MHRD, AICTE, DBT, UGC, MoWR, MNRE, BARC etc.,. A list of completed research projects worth Rs.583.41 lakhs has been shown in Annexure -X
  - Twenty Eight ongoing research projects of the Institute for a total grant of Rs.812.96 lakhs is also shown in Annexure –XI.
- Seventy percent of the faculty members of the Institute hold a PhD degree from premier institutes. Research scholars of the Institute are being guided by the faculty. Apart from Five research scholars working as full time research scholars on Institute fellowship (University), 43 scholars are working on fellowships from CSIR, DST and UGC fellowships and also in funded research projects as given in Annexure XII.
- A Significant number (327) of research papers are published by the faculty in high impact factor journals.
  - 2007 – 60; 2008-87; 2009&10-180
- Most of the M.Tech dissertations are industry oriented as the M.Tech students are normally sent to various industries for training, thus enhancing the industry-institute interaction, thereby paving the way for collaborative research.
- As part of Research, Development and Innovation, the Institute has been maintaining links with various industries such as IICT, CRIDA, RSI, TRICAD, ERDAS, NGRI, NRSA, SOI, NAARM, NIRD, ICRISAT, EPTRI, CII, Indian Immunologicals Ltd, Bharat Biotech, etc involving the faculty of the departments of Water Resources, Nanotechnology, Bio-technology, Spatial Information Technology, Chemical Engineering and Environment. The linkage with industries has resulted in sharing of knowledge, expertise, specialized resources and collaborative research. It has enabled our members and industry personnel to work together for making research contributions (as evidenced by publications) in critical and emerging areas. It has catalyzed knowledge sharing and knowledge transfer.
- The Institute has initiated linkages with foreign universities namely Northumbria University, University of Westminster, UK and University College of Cork, Ireland. Foreign nationals are also encouraged to join our Institute for pursuing their post graduate education.
- Joint M.Tech programme is being offered in specialization of Water and Environmental Technology at Centre for Water Resources sponsored fully by Central Public Health Environmental Engineering and Organization (CPHEEO) to the employees of central and state government since 2006.
- Several (35) conferences/workshops/seminars and training programmes at national and international level have been organized at the Institute by the faculty, the details of which are furnished in Annexure XIII.
- We can also admit foreign nationals up to 15% of the sanctioned strength. Right now we do have 2-3% foreign nationals on pursuing their Master's programmes.

We would like to go ahead in improving the quality and quantity to cater to the needs of industry and academia. Therefore our inclusion is justified.

2.4 Action Plan for scaling-up enrollment into Masters and Doctoral Programmes

An action plan has been prepared for scaling up enrolment into Masters and Doctoral programmes in the Institute. A bar chart for starting and completion of the key activities related to scaling up enrolment into Masters and Doctoral programmes is presented in the following Figure 1.

Figure 1 Key activities related to scaling-up enrollment into Masters and Doctoral Programmes

Sl. no	Key Activities	1-3	4-6	7-9	10-12	13-15	16-18	19-21	21-24	25-27	28-30	31-33	34-36	37-39	40-42	43-45	46-48
1	M. Tech in Chemical Technology																
2	M. Tech in Bio Technology																
3	Modernization of labs																
4	Enrollment of M. Tech students																
5	Enrollment of Ph.D students																
6	Recruitment of additional faculty																

The Institute has qualified faculty and essential technical staff required to conduct courses for the students, both existing as well as those to be enrolled into Masters and Doctoral Programmes. In this proposal, we are planning to start two new M.Tech programmes (M.Tech in Chemical Technology and M.Tech in Bio-Process Engineering). We have selected these programmes for the following reasons

M.Tech Chemical Technology:

- The trend of chemical industry is, rising demand for speciality chemicals and improvements in production technology.
- For this purpose we have faculty strength of four members in centre for Chemical Science and Technology with two of them being from chemical engineering background.

M.Tech Bio-Process Engineering:

- A challenging area related to production of high value Bio-Pharmaceuticals from living systems.
- As regards bio-process engineering we have faculty strength of four members in centre for bio-technology with one of them being from engineering background.
- However to strengthen the quality of education in these two programmes it is proposed to recruit additional faculty members (one for each programme)

from TEQIP funds. Their services will be continued even after the end of the project period.

- For these courses we already have certain lab facilitates that could be utilized from the Centre for Bio-Technology as well as Centre for Environment.
- As Hyderabad is a hub for a lot of chemical and bio-tech industries, starting of these courses would benefit to the student community and in future research could be under taken in these two areas.
- The well equipped laboratories, library facilities availability of industry oriented projects and better career opportunities after acquiring their degree is the major motivating factor for prospective students to get enrolled into various Masters and Doctoral Programmes offered by the Institute.

Increased enrolment into Master's and Doctoral Programmes is planned through the following actions:

- Strengthening the existing programmes through modernization of existing labs, strengthening of library and placing the students in industries for their projects.
- Introducing new AICTE approved programmes by introducing two new M.Tech courses; one in Bio-Process Engineering and another in Chemical Technology with an intake of 25 each by July, 2011.
    - Procurement of e-learning resources and e-books
    - Establishment of appropriate laboratories
    - Recruitment of faculty

- Offering Joint Master's and Doctoral programmes, establishing MoUs with neighbouring institutions and industries on viable collaborative research/ consultancy projects with specific time frames.
- Offering part time M.Tech and Doctoral programmes at various centres of the Institute keeping the demand in view.
- Enhancing intake in existing PG programmes is planned over and above the sanctioned seats in Centre for Water resources and Centre for Environment.
- Offering 48 numbers of teaching assistantships to non GATE/non sponsored Master's students on par with AICTE scholarship.
- Offering a good number of research assistantships planned to PhD students as decided in BoG following UGC guide lines. 28 Ph.D students for 36 months@ Rs.10,000/- for month for 24 months and @ Rs.15,000/- for remaining 12 months. 28 Ph.D students for 24 months@ Rs.10,000/- for a period of 24 months.

- Outstanding candidates enrolled for PhD, in select cases, will be sent abroad for paper reading in conferences, and exposure/interaction with eminent research institutions/laboratories with due approval from BoG.

    - The expenditure towards reprint and publication charges will be reimbursed.

    - Awards will be instituted for best publication one from each department annually based on the merits of the publication (for publication in high impact factor journals) and the journal in which it is published. This will be decided by a ten member Academic award committee consisting of heads of centers, and external members from the relevant specializations, University nominee and head of the institution.

    - Awards like best Ph.D thesis award annually and best M.Tech thesis award will also be instituted, which will be decided by the Academic award committee.

For enhancing quality and relevance of Masters and Doctoral programs, following measures are planned.

- Faculty development for effective teaching and research competence.
- Restructuring of curricula aligning them with industry needs.

Measures envisaged to be adopted for enhancing demand-driven and industry-oriented applied research and innovation by faculty and students

- Collaborative PhD programs on industry/society real life problems.
- Tie ups with industry for collaborative R&D projects leading to innovations with involvement of M.Tech and Ph.D students.
- Faculty will be encouraged to attend training programmes both within and outside the country for initiating fruitful interactions and joint collaborative research. Faculty will be encouraged to acquire additional qualifications. Certificate of appreciation will be awarded to the faculty based on student feedback.
- A cash award of Rs.25,000/- will be provided as an incentive for the best M.Tech project in each department. This will be selected by an academic awards committee.

Utilizing 20% of the total Institutional project outlay for giving assistantships to Masters and Doctoral students

- 2011-12 ------ Rs. 0.600 Crores
- 2012-13 ------ Rs. 0.700 Crores
- 2013-14 ------ Rs. 0.800 Crores
- 2014-15 ------ Rs. 0.400 Crores

2.5 Action Plan for improving collaboration with industry

An action plan has been prepared for improving collaboration with industry in the areas of research, filing patents, commercialization of innovation, consultancy and joint PG programs. An activity (bar) chart has been prepared in this regard and the same has been presented in the Figure 2. The dire need for effective interactions between academia and industry has been recognized and efforts are being made for the same so as to increase the interaction and expose the faculty and the students to the technologies employed in the industry. The Institute has been maintaining interaction with the industry on an individual basis. It is proposed to formalize this interaction by establishing BoG-approved industry Institute partnership cell (IIPC) with a coordinator, in order to streamline the activities of the cell.

Fig 2. Key activities related to Action Plan for improving collaboration with industry

Sl. no	Key Activities	1-3	4-6	7-9	10-12	13-15	16-18	19-21	21-24	25-27	28-30	31-33	34-36	37-39	40-42	43-45	46-48
1	Establishment of Industry Institute Interaction Cell																
2	Appointment of Coordinator																
3	Pooling of expertise available																
4	Identification of probable industries																
5	Approaching the industries																
6	Continuous interaction for identi-fications of projects																

Action Plan:-

- Evolving a policy of Industry Institute Interaction
- Establishment of Industry Institute Partnership Cell
- Appointment of Coordinator
- Identification of probable industries
- Approaching the industries
- Pooling of expertise available
- Analysis of outflow of faculty expertise and inflow of Industry's expertise
- Utilization of industry's expertise for design of lab, revision of curriculum, expert lectures etc.
- Continuous interaction for identification of problems, leading to a response and culminating in a student's project.

It is not out of place to mention that our Biotechnology students are already carrying out their projects in industries like Indian Immunologicals, NATCO Pharma, Virchow Biotech and other Industries. We already have an ongoing project for technology development for production of L-Arginine by fermentation funded by DST-TIFAC in partnership with Celestial Labs. The other Industry Interactions are listed in Annexure XIV.

2.6 Action plan for quantitatively increasing and qualitatively improving research by the faculty individually, jointly and collaboratively

As the faculty members of the Institute have been actively involved in research, it is not a challenge for us to increase the quantity of publications. As regards to improving the quality, faculty training and admission of research scholars based on UGC guidelines will lead to improved quality of publications. Establishment of research funds with BOG approval and fellowships proposed will also add to improvements in quality.

The faculty and students would be provided with the right atmosphere with no hurdles for carrying out/pursuing their respective activities. The Institute has been following the policy of giving full freedom and the policy of non-interference with regard to execution of R & D projects within the frame work of existing rules of the funding agencies. This is one of the reasons for our Institute faculty members for having at least one R & D project at any given time. The details of ongoing and completed R & D projects are listed in Annexure X and XI respectively. This kind of freedom and lack of hurdles is the constant encouraging factor for all our faculty members being able to do so. The Institute also does not believe in following hierarchy and therefore junior and senior faculty members are encouraged to give their best to the Institute. We will continue to follow what we have already been doing.

We will also take the necessary steps to allow the faculty to complete their teaching load in a flexible manner so that they can plan their research activities either within the country or outside. The faculty members can choose to finish the teaching load in one semester and utilize other semester for research related activities. This will in turn enhance the quality of research leading to good quality publications in peer reviewed journals with high impact factor. This, in turn, helps them to secure more industry and government sponsored projects with the possibility of enhanced citations and patents.

2.6.1 Developing research interest among undergraduate students

Our Institute is concerned with Post Graduate programmes (M.Tech.'s only). Therefore we have drawn up an action plan for developing research interests among the P.G.students. It has been decided in the BoG to create separate research fund for triggering research interest amongst the PG students. The students will be encouraged to carryout industry related projects under the guidance of senior faculty for promoting their participation in research. It has further been resolved to bestow award to the best post graduate student in each department showing interest in research. The selection for the same will be done in accordance with the guidelines laid down by the committee constituted for the purpose.

- Students will be asked to work on Industry related projects to sustain their interest.
- Projects will be assigned in Frontier areas of technology
- Awards will be instituted for the best M.Tech. Project in each of the disciplines

2.6.2 Collaborating with Indian and foreign institutions in academic and research areas through MOUs

Regarding, research collaborations with institutions both within India and abroad we already have project based MoUs with the institutions listed in Annexure XV.

We have strong collaborative linkages with Indian institutions for joint research and academic programmes. Some of the ongoing programmes are Mission mode project on biological hydrogen production, in which faculty from CBT and CEN are co-investigators

along with the others, consisting of IIT Kharagpur, BHU, Allahabad University, TERI, and IICT. CWR is implementing a project on water allocation in Krishna delta along with Centre for Spatial Information Technology, University of Melbourne and International Water Management Institute, Indian branch.

We also have MoU's with University of Cork; Ireland, Northumbria University, and University of Westminster, UK. Under these MoU's, we are planning to offer joint academic programmes leading to post graduate degrees i.e., the students at the end of their programme will obtain an M.Tech degree from JNTUH and an MS degree from any of these universities offering the joint programme.

In this context, it would be appropriate to state that a Joint MS programme in Bio-Technology is being offered from this academic year2010-11 in collaboration with Northumbria University, UK. The other programmes will take off from next year. Under these programmes credits earned by the students in their first semester of study at IST, JNTUH will be transferred to respective university.

We are also trying to build up international network for collaborative research. In this context, Dr. M. Lakshmi Narasu, Professor of Bio-Technology and Director of this Institute who has been awarded **"The Endeavour Executive Award"** by the Australian government will be visiting Department of Chemical Engineering, Monash University, Melbourne, Australia, during the months of November-December,2010 for interaction and for collaborative research. We will strive our best to continue and improve on what we have already been doing.

2.6.3. Revenue sharing Mechanism

As of now, no funding agency in the country gives honorarium to the Principal Investigator for his contribution (for the expertise or the time spent) in executing any project. Therefore it is not possible at this point of time to develop a revenue sharing mechanism for motivating the faculty members. The actual motivation for the faculty member would be the results obtained in the form of publications and PhD guidance and the sense of satisfaction and pride. However, we will try and introduce financial grant for faculty members handling R & D projects from the Institute funds so that it could be utilised for their lab improvement after approval from the BoG. It is proposed to sanction a minimum of 2% of the grant or Rs.20,000/- per project whichever is higher.

2.7: Summary of Faculty Development Plan from the first 18 months to achieve improved competence based on Training Needs Analysis (TNA)

A six member committee has been constituted by the Director of the Institute at the level of each department consisting of Head of the department as Chairman, two senior professors, one industrialist, one academician and one student alumnus to finalize the individual and departmental training needs. All the Six Heads of the department reviewed their individual filled-in TNA forms and aligned the individual development aspirations with the department's objectives and priorities and consolidated them into a Departmental Training/Development plan. Director finally reviewed all Departments' Training/Development plan's and made efforts to align it with the institution's objectives and priorities and consolidated them into Training/Development plan. The Director then recommended the final institutional Training/Development plan for approval in BoG and the same has been presented in the form of bar charts shown in Figures 3 and 4.

2.7.1 Basic and advanced pedagogy training

It has been decided in the BoG to depute the younger faculty to attend basic training programmes on teaching methodologies and also orientation programmes. All faculty members of individual centres will also be attending training programs organized by SPFU for having an exposure to different subject domains. These programmes are proposed to be of two week duration and faculty members will be deputed on rotational basis for attending these training programmes. Alternative arrangements will be made for the absence of the faculty during these training programmes.

2.7.2. Improving research capabilities

Based on the TNA it was decided that the faculty from different centres would be sent for training in areas of their deficiency and also in identified thrust areas where they can initiate their research and fruitful collaboration. All faculty members of the Institute will be given an equal opportunity to avail the benefits of the Project. The thrust areas identified for each of the centres, the expertise available and the area of training are as shown below. It is submitted that the previous training programs attended by faculty during Phase I of TEQIP has had a positive impact leading to initiation of research in newer areas of research, knowledge sharing and knowledge transfer.

Centre for Chemical Sciences and Technology

Thrust areas identified: catalysis, fluidization, multi phase transport phenomena, hazardous chemical management, and drug design

S. No	Name of the faculty	Areas of Expertise	Area of training
1	Prof. K. Mukkanti	Catalysis	Green catalysis
2	Prof. A. Jayasree	Drug design	Drug design
3	Dr. T. Bala narasaiah	Circulating fluidization	Fluidization Engineering
4	Mrs. A. Meenakshi	Microwave heating of food samples	multi phase transport phenomena

Center for Biotechnology:

Identified thrust areas are Metabolic Engineering, Micro arrays, Bio conversions, Proteomics, Bio process Engineering

S.No	Name of the faculty	Areas of Expertise	Area of training
1	Prof. M. Lakshmi Narasu	Bio transformations, Cancer Biology	Micro arrays
2	Dr. Archana Giri	Plant Biotechnology	Metabolic Engineering
3	Dr. Uma	Bioconversions, Bio fuels	Proteomics
4.	Mr. L.Saida	Bio Chemical Engineering	Bio process Engineering

Center for Environment:

Identified thrust areas are Remote sensing, Geo Spatial Technology, Metabolomics, Hydrogen energy, Bio fuels, EIA, Environmental geomatics, Fuel cells.

S. No	Name of the faculty	Areas of Expertise	Area of training
1	Prof. M. Anji Reddy	GIS	Geo Spatial Technology
2	Dr. Ch. Sasi Kala	Microbial biodiversity	Metabolomics
3	Dr. V. Hima Bindu	Hydrogen Energy	Fuel Cells
4.	Dr. T. Vijaya Lakshmi	Natural Resoures Management	Environmental geomatics

Center for Nano Science and Technology:

Identified thrust areas are Synthesis of Nano Materials by Chemical Methods, Fabrication of Thin films, Nano Thin films, Characterization of nano Materials.

S. No	Name of the faculty	Areas of Expertise	Area of training
1	Dr. K. Venkateswara Rao	Synthesis of Nano materials	Thin films fabrication and Characterization
2	Ms.Ch. Shilpa Chakra	Bio medical Applications	Nano drug delivery Systems

Center for Water Resources:

Identified thrust areas are Water resources, Water shed management, Surface water Hydrology, Disaster Management, Rock Fracture Hydrology.

S. No	Name of the faculty	Areas of Expertise	Area of training
1	Prof. B. Venkateswara Rao	Ground water Resources	Water shed management
2	Prof. K. Ramohan Reddy	Hydraulics	Surface water Hydrology
3	Mrs. C. Sarala	Waste Water Treatment	Rock Fracture Hydrology
4	Dr. M. V. S. S. Giridhar	RS & GIS Applications	Disaster Management

Center for Spatial Information Technology:

Identified thrust areas are GNSS and its applications, Photogrammetry, Applications of DGPS, GIS analysis, Integrated approaches to water shed management.

S. No	Name of the faculty	Areas of Expertise	Area of training
1	Mr. J. Venkatesh	Applications of GPS	Applications of DGPS
2	Prof. K. Manjula vani	DBMS	GIS
3	Dr. S. Vidhya vathi	Web technology	Integrated approaches to water shed management

It may be added that International training has been proposed only in cases where raining is not available in our country.

Fig 3. Regular Faculty Training Needs Analysis

S.No	Name of the Faculty	Nov -10	Dec -10	Jan -11	Feb -11	Mar -11	Apr -11	May -11	June -11	July-11	Aug -11	Sep -11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
1.	Dr. M. Lakshmi Narasu																	
2.	Dr. Archana Giri																	
3.	Dr. A. Uma																	
4.	Mr. L. Saida																	
5.	Dr. K.Venkateswara Rao																	
6.	Mr. J. Venkatesh																	
7.	Dr. K. Manjula Vani																	
8.	Dr. S. Vidyavathi																	
9.	Dr K.Mukkanti																	
10.	Dr. A. Jayashree																	
11.	Dr. T. Balanarasaiah																	
12.	Mrs A.Meenakshi																	
13.	Dr.M. Anjireddy																	
14.	Dr.Ch.Sashikala																	
15.	Dr. V Hima Bindu																	
16.	Dr. T Vijaya Lakshmi																	
17.	Smt.C.Sarala																	
18.	Prof. B.Venkateswara Rao																	
19.	Prof.K.Rammohan Reddy																	
20.	Dr. M.V.S.S. Giridhar																	
21.	Ms Ch. Shilpa Chakra																	

Fig 4. Lecturers Training Needs Analysis

S.NO	Name of the Faculty	Nov -10	Dec -10	Jan -11	Feb -11	Mar -11	Apr -11	May -11	June -11	July-11	Aug -11	Sep -11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
1.	Mrs. P. Lakshmi																	
2	Mrs. E.Sirisha																	
3	Mr. B. Kalyan Chakravarthy																	
4	Mr.G.Uma Maheshwara rao																	
5	Ms. K.Radhika																	
6	Mrs.Ch Kalyani																	
7	Mr. K.Deepak Raj																	
9	Ms Subhashini																	
10	Dr Vivek Dhand																	
11	Mr N.N Phani Kumar																	
12	Dr J V Ramana Rao																	
13	Mrs.V.Varalakshmi																	
14	Mrs. K.Manjula																	
15	P. Shalem Raj																	
16	K. Rama Sarada																	
17	P.Subash Babu																	
18	M. Satish																	
19	P.SatyaRamesh Potti																	

20	Mr. K. Naresh Kumar																		
21	Mr. G. V. Siva Prasad																		
22	Mrs. N. Mamata																		
23	Dr. Syed Azeem Unnissa																		
24	Ishitha Roy																		
25	P.Kalyani																		
26	Azmatunnisa																		
27	Sesha bala																		
28	K.Naresh Kumar																		
29	G.V Siva Prasad																		
30	K.Santosh																		
31	Dhilli Rao.G																		
32	J. Koteswara Rao																		
33	V.Hema Sailaja																		
34	N.Mamatha																		
35	K V NS LAkshmi																		
36	M.Priyadarshani Devi																		
37	M.Chandana																		

Trainings have been proposed for contract faculty with an aim to build capacity

2.8: Action Plan for training technical and other staff in functional areas:

Training for administrative staff has been proposed with a view to increase their functional efficiency.

Training of administrative staff is based on the use of modern office gadgets, software and office automation and maintenance of records and procedures. All the staff in the Institute will be given equal opportunity to avail the benefits of the Project.

Technical staff training has been proposed for essentially for skill development. An eighteen month action plan has been prepared for training technical and administrative staff in their functional areas. Initially, proposals from technical as well as administrative staff for training in the desired functional areas were invited from each department. The proposals thus collected from each department have been placed before the committee consisting of members from each department for scrutiny. Finally, after scrutinizing the proposals, based on the deficiencies of staff, a training needs document was prepared. Keeping in view the training needs of the technical and administrative staff, a time schedule of training the technical staff and administrative staff of the Institute has been prepared and same has been presented in the form of a bar chart in Figures 5 and 6. Alternative arrangements will be made for the absence of the staff during these training programmes. The focus of training the technical staff in laboratories and workshops is on operation and maintenance of equipment existing as well as equipment to be procured during the project period and also on research related activities.

Fig. 5 Training schedule for administrative staff

S.No	Name of the Faculty	Nov -10	Dec -10	Jan -11	Feb -11	Mar -11	Apr -11	May -11	June -11	July-11	Aug -11	Sep -11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
1	M. Narayana Murthy																	
2	V. Rajya Lakshmi																	
3	D. Siva Shakar																	
4	N. Prabhakar																	
5	V. Ramulu																	
6	B. Vasanth Kumar																	
7	K. Narendra																	
8	N.Anitha																	
9	P. Venkatesh																	
10	Sk. Mohiddin																	
11	Ch. Shyam Kumar																	
12	M. Azma Tunnisa																	
13	G.Malathi																	
14	T. Lakshmi Prasanna																	

15	K. Venkatesh																	
16	Y.M. Vivian																	
17	D.Nalini Kumari																	
18	M. Rajendra Babu																	
19	K. Siva Prasad																	
20	P. Padmavathi																	
21	K. Helma																	
22	D.N.V. Sudershan																	
23	Ruksana Begum																	
24	E. Thirumalesha																	
25	D. Kalyani																	
26	K. Ratna Vathi																	
27	A.RamaKrishna																	

Fig. 5 Laboratory Staff training Needs Analysis

S.No	Name of the Faculty	Nov -10	Dec -10	Jan -11	Feb -11	Mar -11	Apr -11	May -11	June -11	July-11	Aug -11	Sep -11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
1	K. Booma Devi																	
2	U. Purushotham																	
3	M.Rajani Kanth																	
4	T.L.Ravi Kanth																	
5	D.Gopal Naik																	
6	T. Jaya Babu																	
7	M. Azma Tunnisa																	
8	M.Vidhyadhar																	
9	Ch. Shyam Kumar																	
10	P. Sangeetha																	
11	Shaik Khaja																	
12	Manmohan kankani																	
13	P. Madhavi																	
14	P.Deepthi																	

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

The government of India's development objectives in Technical Education is to increase the no. of M.Techs and PhDs in Engineering to cater to the needs of research in industry and academic institutions. Besides, the main concern of the government is to provide quality technical education, especially in view of the mushrooming growth of engineering colleges with the prevention of capitation fee.

On these lines, the Government of Andhra Pradesh is also striving to improve the quality in technical education, provide merit based admissions, prevention of capitation fee and develop a large pool of qualified faculty in view of the large number of engineering colleges in the state and also to cater to the needs of the research and industry.

In the backdrop of these objectives, the IDP proposed meets the objectives by way of continuing merit based admissions through GATE and PGCET, affordability through subsidized fees and fellowships and assistantships provide increased access by starting new programs and seeking NBA accreditation for enhancing the quality. In view of this, our IDP could be apt in seeking assistance under TEQIP II.

- ✓ The action plans incorporated in IDP in terms of
  - Scaling-up of enrollment into Master's and Doctoral Programmes
  - Improving collaboration with industry
  - commercialization of innovation and Consultancy
  - joint PG programmes and collaborative research
  - improving the quality of research
  - increasing the number of publications
  - Developing research interest among postgraduates students
  - Collaborating with Indian and Foreign institutions
  - Training technical and other staff in functional areas and
  - Organizing a finishing schools within budgetary limits

  has been prepared so as to ensure socio economic development leading to industrial growth.

The specific objectives and expected outcomes furnished in the proposal have been fixed keeping in view the requirement of the region so that the technological inputs provided by the institution will benefit the region in terms of industrial and entrepreneurship development and also the rural development.

2.10 Describe briefly the participation of departments/faculty in the preparation of its IDP

The targets projected in this IDP have been set in consultation with the faculty members. This IDP has the acceptance of all the faculty members and they all owe responsibility for successful implementation of the project.

- All the staff including teaching (including ad-hoc and contractual), administrative and technical staff, Departmental Heads and Director have been involved at various stages of IDP preparation. The following Nine committees participated and worked in coordination to prepare action plans and finally the IDP preparation

- Director of the Institute Dr. M. Lakshmi Narasu headed all the teams responsible at various levels for the preparation of IDP. Dr. M.V.S.S. Giridhar, Nodal Officer TEQIP - Phase – II acted as coordinator for the preparation of IDP, coordinating various working groups constituted for the purpose of preparing various components and developing the database required to give full shape to the IDP preparation.

- SWOT analysis was carried out initially at department level with a departmental committee along with faculty (regular and adhoc), staff and non-teaching staff and students. It was subsequently reviewed by eminent academicians from outside the Institute and industrialists along with alumni of the Institute. Finally, after receiving the SWOT analysis reports from the individual departments, the report was consolidated for preparation of institutional SWOT. The team finally fixed the targets and also decided on the action plan as per the institution's capabilities and weaknesses.

- Prof.K. Mukkanti, Head and Professor of Centre for Chemical Sciences and Dr. Archana Giri centre for biotechnology, were in charge of the team for identifying new academic programs, establishment of new laboratories and modernization of existing labs. Prof.Jayasree, Dr. T. Bala narasaiah, Associate Professor Ms. A. Meenakshi, Assistant Professor, and Shri Saida Naik were the other team members who have been identified for deciding on the new M.Tech. programmes of the Institute.

- Prof M. Anji Reddy, Professor of Environment and Director, University Foreign Relations with his team members consisting of Dr. T. Vijaya Laxmi and Dr.A.Uma assistant professors, were in charge of identifying key activities related to scaling-up of enrolment into Master's and Doctoral programmes taking into account the availability of qualified faculty and essential technical staff and finally developed an Action Plan for scaling-up enrollment into Masters and Doctoral Programmes.

- Prof. B. Venkateswara Rao, Professor, centre for water resources and Coordinator, CASWAM, and his team members comprising of Dr.S.Vidyavathi and Shri.J.Venkatesh associate professors of CSIT together have developed the action plan for improving collaboration with Industry in the areas of research and Consultancy. The team also focussed on plans for quantitative qualitative improvements in research by the faculty individually, jointly or collaboratively.

- Training Needs Analysis (TNA) was carried out for the Institute under the leadership of Dr. K. Ramamohan Reddy, Professor centre for water resources and Controller of Examinations and his team members viz., Dr.K.Venkateshwar Rao, associate professor and Dr.M.V.S.S.Giridhar, assistant professor, Shri M.Narayana Murthy Deputy Registrar and Shri Shankar Senior Assitant were identified to develop the training need analysis and the corresponding training/development plan to be implemented. The team arrived at Faculty Development plan for the first eighteen months for improving teaching and subject area and research competence based on

TNA. Eighteen month action plan for training technical and other staff in their respective functional areas has also been prepared by the team.

- The relevance and coherence of Institutional Development Proposal with State/National (in case of CFIs) Industrial /Economic Development Plan has been compared and correlated by the team headed by Prof Sashi Kala Head, Centre for Environment and Dr. V. Hima Bindu, Associate professor, and Ms. Ch. Shilpa Chakra, Assistant professor. The team further developed a proper integrated and coordination mechanism for carrying out the Institutional project implementation arrangements.

- Prof.M.Lakshmi Narasu, Dr.M.V.S.S.Giridhar, Dr. Archana Giri, and Mr. Narayana Murthy, provided an Institutional Project budget in the form of relevant tables for the permissible and non-permissible expenditures detailing year wise breakup over Five Indian financial years. The action plan with budget for organizing a finishing school in accordance with the pattern of permissible and non-permissible expenditure was also been prepared by the team.

- Action plan for sustaining the gains of the project after the closure of project has been developed by the team lead by Dr. K. Manjulavani, professor Sri.J.Venkatesh, Head, Centre for Spatial Information Technology with Sri G. Malathi, Junior Assistant. The team also provided the information related to specific academic achievements of the institution.

- Procurement Plan with respect to the proposed activities for the first 18 months for Goods and Civil Works has been prepared by the team headed by Prof. M.Lakshmi Narasu, along with the team members Smt. C. Sarala, Dr. M.V.S.S. Giridhar and Dr. G. Krishna mohan.

2.11 Institutional Project Implementation Arrangements:

Various specialized committees comprising of faculty and senior staff for evolving proper integrated and coordination mechanisms related to procurement, budget preparation, establishment of new PG courses, establishment of new laboratories, modernization of existing labs, SWOT analysis, TNA, Civil works have been constituted by BoG for preparation of IDP under the stewardship of the Director of the Institute. Participation of all the class –IV staff, support staff, technical staff, administrative staff, faculty (including adhoc and contractual), departmental Heads and Director have been involved at various levels of IDP preparation. The following Nine committees participated and worked in coordination to prepare action plan and finally the IDP preparation. These are formed after approval from BoG.

Sl. No	Name of the committee	Chairman/Chairperson	Members	Responsibilities
1.	Procurement committee	M.Lakshmi Narasu	Smt. C. Sarala, Dr. M.V.S.S. Giridhar, Dr. G. Krishna mohan.	To prepare tender documents with the budgetary limits To distribute equally to all the departments To see that the equipment is in place within the time frame as proposed. To see that all equipment is operated and maintained properly
2.	Budget implementation committee	Dr. M.V.S.S. Giridhar	Prof. M.Lakshmi Narasu, Dr. Archana Giri, Mr. Narayana Murthy	To prepare total budget with year wise breakup To distribute equally to all the departments (equity action plan) To see proper utilization of funds
3.	Committee for establishment of PG courses, establishment of new laboratories and modernization of existing labs	Prof.K. Mukkanti,	Dr. Archana Giri Prof.Jayasree, Dr. T. Bala narasaiah, Ms. A. Meenakshi, Mr. L. Saida.	To propose core engineering PG programs To get funds for the laboratory development

4.	FSDP committee	Dr. K. Ramamohan Reddy	Dr.K.Venkateshwar Rao, Dr.M.V.S.S.Giridhar, Mr. M.Narayana Murthy, Mr. Shankar	To encourage faculty to undergo training in a orderly manner To Sanction budget against the each program
5.	Civil works committee	Prof. K. Ramamohan Reddy, Professor	Dr.S.Vidyavathi,Associate Professor, Smt. C. Sarala, Dr. S. Shoba rani, Ms. M. Ajitha	To renovate old buildings To provide staff rooms and class rooms To provide spacious laboratories
6.	Disciplinary committee	Mr. J. Venkatesh, Head	Dr. K. Manjulavani,	To provide rules for the senior students not to rag juniors To provide good environment for the students
7.	Students Affairs Committee	Dr. G. Krishna mohan	Smt. M. Sunitha, B. Srinivasulu	To Conduct Inter college activities To provide flat form for the students to involve in co-curricular activities
8.	Grievance committee	Dr. Archana Giri	Mr. Saida, , Dr. A. Uma,	To receive complaints from the concerned faculty members To study the complaint in detail To constitute a committee based on the problem to resolve
9.	Library committee	Dr. K. Venkateswara Rao	Dr.Krishna Mohan Dr.ArchanGiri, Dr. Himabindu, Dr.Vidyavathi	To Receive list of required books from all the centers To provide good number of books and journal for the academic usage To provide good place for the library
10.	Committee for organizing a finishing school.	Dr.B.Venkateshwar Rao	Dr.T.Vijayalakshmi Dr.Uma	To identify academically weak students and disadvantaged sections of the society from each department To prepare consolidate list of academically weak students and disadvantaged sections of the society at institute level. To design remedial measures in the form of coaching classes and problem

Director
JNTUH Institute of Science and Technology,
Hyderabad, Andhra Pradesh

				solving sessions for successful learning. To prepare the budget estimate and get the approval from Director for all the training programmes/coaching classes. To prepare schedule and organize training/coaching classes for improving the communication skills of the students To prepare schedule and arrange Special Group discussions, mock interviews to bring them at par with the industry needs.
11.	Equity Assurance Plan	Prof:M.Lakshmi Narasu	Shri. J. Venkatesh, Smt. C. Sarala Dr.Sashi kala Dr. Archana Giri Dr. K. Venkateswar Rao and Dr.K.Mukkanti	To encourage all faculty members for undergoing training To encourage them to participate in seminars, workshops and international conferences To identify the academic weak students from all departments Arrange for remedial coaching and extra practical training To conduct classes in personality development and communication skills
12.	Institutional Development Committee	Prof. M. Anji Reddy	Prof. B. Venkateshwar Rao, Prof.K.Mukkanti, Prof. M. Lakshmi Narasu	To Encourage staff in the research by giving them good incentives To provide facilities to carry out research work

2.14 Table - 34: INSTITUTIONAL BUDGET

S.No.	Activities	Max.Project Allocation (Rs.in crore)	Project the Allocation (Rs.in crore)	Financial year				
				2010-11	2011-12	2012-13	2013-14	2014-15
1	Infrastructure improvements for teaching, training and learning through:							
	(i) Establishment of new laboratories for new and existing PG programmes, faculty research, etc. 33%	**4.125**	4.125	0.00	3.880	0.245	0.000	0.000
	(ii) Updation of learning resources 3%	**0.375**	0.375	0.050	0.100	0.100	0.100	0.025
	(iii) Procurement of furniture 2%	**0.250**	0.250	0.030	0.20	0.01	0.01	0.00
	(iv) Modernization and strengthening of libraries and increasing access to knowledge resources 4%	**0.500**	0.500	0.025	0.150	0.175	0.075	0.075
	(v) Refurbishment (Minor Civil Works) 3 %	**0.375**	0.375	0.01	0.250	0.115	0.0	0.0
2	Providing Teaching and Research Assistantships for significantly increasing enrolment in existing and new Masters and Doctoral programmes in Engineering disciplines 20% • 48 M.Tech students for 24 months @ Rs.8000/-per month • 14 Ph.D students for 36 months@ Rs.10,000/- for month for 24 months and @ Rs.15,000/- for remaining 12 months	**2.500**	2.490	0.000	0.286	0.566	0.819	0.819
3	Enhancement of R&D and institutional consultancy activities 5%	**0.625**	0.625	0.010	0.300	0.200	0.100	0.015
4	Faculty and Staff development for improved competence based on TNA 10%	**1.250**	1.250	0.200	0.400	0.300	0.300	0.050
5	Enhanced interaction with industry 5%	**0.625**	0.625	0.050	0.224	0.130	0.130	0.091
6	Institutional Management Capacity enhancement 2%	**0.250**	0.250	0.030	0.060	0.065	0.065	0.030
7	Implementation of institutional reforms 1%	**0.125**	0.125	0.061	0.025	0.013	0.013	0.013
8	Academic support for weak students 2%	**0.250**	0.250	0.020	0.080	0.070	0.060	0.020
9	Incremental Operating Cost 10%	**1.250**	1.250	0.114	0.260	0.279	0.299	0.298
	Total	12.50	12.490	0.600	6.215	2.268	1.971	1.436

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2.13 a

Table-35 : INSTITUTIONAL PROJECT TARGETS

Sl No	Deliverables	Baseline data as 31-03-2010	Targets to be achieved	
			At the end of 2 years	By Project closing
1.	Number of students registered for (a) Masters in Engineering Programme (b) Doctoral Programme in Engineering	 **267** **024**	 **450** **52**	 **900** **80**
2.	Revenue from externally funded R&D project and consultancies in total revenue (Rs.in lakhs)	**207.36**	**310**	**410**
3.	Number of (a) research publication in referred • National journals • International journals (b) Citations (c) Patents obtained / filed (d) Books/Proceedings (e) No. of R&D projects commercialized	 **31** **40** **--** **2** **4** **0**	 **58** **40** **2** **3** **5** **2**	 **120** **80** **3** **4** **6** **4**
4.	Number of co-authored publication in refereed journals (a) National (b) International	 **26** **35**	 **35** **25**	 **45** **50**
5.	Student credentials (a) campus placement rate of • PG students (b) Average salary of placement package for (Rs. In lacs) • PG students	 **20%** **4**	 **40%** **5**	 **50%** **6**
6.	Number of collaborative programmes with industry	**4**	**5**	**7**
7.	Accreditation Status	**Applied for Six Courses**	**100%**	**100%**
8.	Vacancy position for faculty and staff	**01**	**Zero Vacancy**	**---**
9.	Number of regular faculty with Ph.D in engineering disciplines	**5**	**7**	**10**
10	Any other (maximum three)	**---**	**---**	**---**

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2.14(b) The plan in detail for achievement of the above targets enumerated in Table-35:

The plan has been designed based on the key activities.
The following action plan would be implemented for achieving the targets outlined in Table 35.

- It is planned to enhance the present enrollment of M.Tech students from 267 to 400 by the end of first two years of the project period and to 450 by the end of the project closing.
- It is planned to enhance the present enrollment of Ph.D students from 24 to 52 by the end of first two years of the project period and to 80 by the end of the project closing.
- The following measures are planned to be adopted to enhance the enrollment of M.Tech and Ph.D students in the Institute.
    - Introduction of two new M.Tech programmes.
    - Enhanced intake into existing M.Tech programme
    - Increased enrollment into Ph.D.programmes

  With our strong research culture, we are confident of attracting more number of R&D funding and committed researchers with concomitant increase in publications. The present pace of research will enable us to publish more. The incentives proposed in this project proposal would also result in higher number of publications.

    - It is relevant to add that before achieving the target, it is planned to establish the new laboratories as mentioned in the proposal and also upgrade the existing laboratories besides recruiting the faculty in selected areas.
    - The revenue from externally funded R & D projects is expected to rise from Rs. 206.37 lakh to Rs. 310 lakh by the end of first two years of the project period and to Rs.410 lakh by the end of the project closing due to envisaged increase in R & D activities in the Institute. The expected increase in R & D activities will automatically result in increase in research publications and carrier opportunities to student's thereby enhancing quality of education.

2.14: Action plan to ensure that the Project activities would be sustained after the end of the Project

Sustaining the implementation of reforms is not a problem for us because of the enabling environment, pro-active BOG and the existing work culture. Inview of the present scenario for maintaining quality, the autonomy we have will enable us to make continuous improvements.

Sustaining new programmes, continuing the new programmes and regular revision of syllabus for the existing programmes will continue to make them more attractive. New programmes will be continued beyond the project period depending on the demand.

Continuance of fellowships and assistantships and fellowships from IRG generated and the four funds established will help us to sustain post project period.

It is expected that continued support would be received from students, industry, state and government of India.

- The Institute has been functioning for the last 20 years and has maintained a high level of achievement. The Institute has conducted a number of national and international seminars/workshops/conferences / training programmes in various areas covering all the six centers. Special courses are being offered to the professional bodies as per their requirements.

- Out of the revenue generated, the amount remaining after meeting all the expenditure will be diverted for generating Corpus fund (40%), Staff development fund (25%), Maintenance fund (20%) and Depreciation Fund(15%).
- As on date, the estimated revenue of the Institute is Rs. 281.58 lakh from fee collection every year. The average expenditure is Rs.117.72 lakh per year. Besides this, the salaries of the out source staff which will not exceed more than 50 lakh per annum, the total expenditure will not exceed 167.72 lakh per annum. In any given year, the Institute will have a saving of Rs.1.00 crore, when calculated with the present strength. With this financial strength, it can be seen that the Institute is self sustaining at any given time. We can still continue to carry out all the other activities of the TEQIP even after the end of the project period. Under any circumstances there will be net balance of funds available for sustenance.

2.15 (a) Procurement plan for the first 18 months for goods/ Civil Works (Table-36)

A procurement committee consisting of Smt. C. Sarala, Dr. M.V.S.S. Giridhar, Dr. G. Krishna Mohan and Head of the Institute has prepared the procurement plan for goods for the first eighteen months of the project period with in the budgetary limits which has been presented in Table-4. A total number of 89 items have be identified with 4 items falling under International Competitive Bidding (ICB), 61 items under National Competitive Bidding (NCB), 20 items under Direct Shopping (DS) and ----------under ( ). The total estimated cost arrived from the procurement plan has been found to be Rs.---------- with Rs--------- under ICB, with Rs--------- under NCB, with Rs--------- under DS and with Rs---------- under.

DC-0.65-4
SH-14.53-20
NCB-260.55-61
ICB-112-4
Total-387.73-89

2.15(b) table – 37: 18 months procurement plan for consultancy services including pedagogical training

Sl.No.	Description of Services	Estimated Cost (Rs)	Methods of Selection @	TOR Finalization (Date)	Advertisement (Date)	♦RFP Final Draft to be forwarded to the Bank	No Objection from Bank for RFP/Date)**	RFP Issued (Date)	Proposals Received (date)	Evaluation (Date)	No Objection by the Bank (Date) **	Contract Value & Date of	Contract Completion (Date)
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
- N A -													

♦ RFP (Request for Proposal): Same as 'Bid Document' #Technical and Financial
** Applicable in case of 'Prior Review' by Bank
@ State whether (i) Single firm or individual; or (ii) Competitive. If Competitive, then state whether Quality and Cost Based Selection (QCBS) or Quality Based Selection (QBS)

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2.16: Other information related to special academic achievements as given in eligibility proposal of the Institution

- A total number of three hundred and twenty seven (327) research papers (including national and international), books and patents have been published by the faculty in National and International journals since last three years and the list is enclosed in Annexure XVII.

- Thirty five (35) conferences/seminars/workshops have been organized at National and International level by the Institute in the last three years and the proceedings to that effect were published. List for the same has been enclosed in Annexure XIII.

- The Institute organized thirty three (33) specialized training programmes in the last three years for various sectors including Water and Soil Conservation Technologies for Improving Agricultural Productivity, RS and GIS applications to Water and Environmental Technologies, GIS, Auto CAD Applications & Internet GIS concepts for key Municipal Functionaries of Project Towns of APUSP, environmental biotechnology at centre for environment, Best Practices On Environment, Health and Safety, Medicinal Plants for unemployed youth etc., the list being enclosed in Annexure XVIII.

- A total number of fifteen (15) awards and recognitions have been received by the faculty from various reputed national and international institutes as well as Central and state governments in the last three years and the list has been enclosed in Annexure XIX. Prof. M. Anji Reddy was awarded AP Scientist Award by the Government of Andhra Pradesh by the year 2010 in the field of Engineering and Technology. Prof. M.Lakshmi Narasu has been awarded Endeavour Executive Award, by the Australian Government in the year 2010.

- Twenty five collaborations/interactions have been established by the Institute with foreign and national universities in the last three years, the details being enclosed in Annexure XV.

- The number of collaborations/interactions established by the Institute in the last three years with international industries were twelve (12) and number of collaborations/interactions with national industries were twenty seven (27), list being enclosed in Annexure XIV

- The Institute has its own website www.istjntuh.org and all the information pertaining to the Institute in terms of list of students, list of faculty, AICTE mandatory disclosure, TEQIP Phase – II proposals, Disclosure Management Framework (DMF) information etc., has been kept in the web site which will be continuously updated.

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2.17 Action plan with budget for organizing a finishing school

The key activities of the Finishing School are as follows.

- Conducting bridge courses and remedial classes to bring all students to the same level of proficiency.
- Organize programmes for development of soft skills and presentation skills
- If required provide special skills training to students with priority to weak students.
- Providing high intensity training for a minimum duration of four weeks for development of soft and professional skills in the students that graduate but fail to secure any employment
- Conducting workshops for students to develop positive thinking and motivation among the students to bring about attitudinal metamorphosis.
- Organizing technical visits to relevant industries and R & D institutions to give exposure to the students.
- Providing training programmes with special emphasis on development of communication skills and Personality development.
- Arranging training programmes to provide hands on experience in certain technical and modern emerging areas of demand.
- Providing intensive analytical training workshops with case studies and experimental data so as to improve their analytical skills.

Fig Key activies for finshing shool

S.No	Name of the Key activity	1	2	3	4	5	6	7	8	9	10	11	12
2010 adimmted batch									2011 admitted batch				
1	Identify weak student	start		End									
2	Identification of the faculty (based on the weakness of the students)				Start								
3	Remidal coaching/ Bridge course				start		End						
4	Communication skills and personality development				Start		End						
5	Special skill training (during semester break)						Start end						

The activities shown in the figure are indicated for the students of 2010 and 2011 batches. For the other batches the activities will continue as shown for the 2011 batch.

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2.18 Concluding Remarks:

- If selected in the project we will implement the project uniformly for all the faculty and students without any bias and to the satisfaction of all stakeholders.
- Equity in enrollment of students and faculty will be observed as per Govt. of India's rules. We will also be addressing weak students, under qualified teachers and maintaining gender friendly system by providing the necessary facilitates. We will also be providing note books, pen drives, CD's, and study materials to students, there by encouraging them to perform better.
- Priority will be given for women in day to day activities.
- The Institute will follow a gender friendly system.
- The institutional information will be available on the website www.istjntuh.org.
- All the details of the project in matters of finance, targets set, progress and periodic performance evaluation will be placed on the website.
- Apart from these, software like PMSS, FMSS and MIS in the project will be adhered to and all the details of equipment purchased, money spent, achievements against the targets will be published in the website.
- Friendly environmental management systems like implementation of clean and green, sewerages systems, lighting etc.,