Proposal Submitted by

JNTUH COLLEGE OF ENGINEERING HYDERABAD (JNTUHCEH) HYDERABAD

under

Sub Component 1.2
Scaling Up PG Education and Demand Driven R, D & I

TECHNICAL EDUCATION QUALITY IMPROVEMENT PROGRAMME (TEQIP - II)

of

The Ministry of Human Resource Development, Government of India

Submitted through

GOVERNMENT OF ANDHRAPRADESH

On

August 16, 2010

to

NATIONAL PROJECT DIRECTOR
NATIONAL PROJECT IMPLEMENTATION UNIT
Ed. CIL HOUSE, 4th FLOOR, PLOT NO. 18-A, SECTOR 16-A
GAUTAM BUDDHA NAGAR, NOIDA – 201 301, UTTAR PRADESH

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INDEX OF INSTITUTIONAL PREPERADENESS AND KEY ACTIVITIES

CERTIFICATE

Certified that the information provided in the proposal is factually correct to the best of our knowledge and wherever possible has been substantiated with the relevant documents.

The institution has not applied under TEQIP Sub Component 1.1.

The proposal is submitted with the approval of the Governing Body.

All the stake holders (students, staff, parents, industry) were involved in the preparation of this proposal.

All the Faculty / departments are involved in the preparation of Institutional Development Proposal (IDP) and Project Implementation arrangements, Procurement Plan and Faculty Staff Development Plan (FSDP).

The autonomy status has already been granted by the University. The Institute has applied for Autonomous Status to UGC for exercising autonomy. UGC status 2(f) is already granted.

Signature of the Head of the Institution

Place: Hyderabad
Date: 16-08-2010

MEMBERS OF THE GOVERNING BODY

Sl. No	ROLE	NAME	E-Mail id	Phone Nos.
1	**CHAIRMAN**	**Prof.B.L. Deekshatulu** **Eminent Academician** **Visiting Professor, UOH**	deekshitulu@hotmail.com	**9908499081**
2	**MEMBER**	**Mr.Ramesh Datla** Managing Director Elico Ltd.	rameshd@elicoltd.com	40-23771262
3	**MEMBER**	**Mr.Sarat Chandra Babu** Executive Director C-DAC, Bangalore	sarat@cdac.in	98483508777
4	**MEMBER**	**Mr.Ravi Kumar.S** Head- Hyderabad Development Center Infosys Technologies Limited, Hyderabad	ravikumar_s@infosys.com	9849491052 40-67024608
5	**MEMBER**	**Mr.Harish Chandra Prasad** Chairman Malaxmi Infra Ventures (India) Pvt.Ltd.	harish@malaxmi.in	9848111511 040-23358951
6	**MEMBER**	**Dr.Prahlada** Chief Controller DRDO, New Delhi	prahlada.ramarao@gmail.com	09810667601
7	**MEMBER**	**Er.F.C.S. Peter** Director General National Academy of Construction.	fcspeter@nac.edu.in	9440819575
8	**MEMBER**	**Dr.K.Lal Kishore** Director R&D, JNTUH, Kukatpally	lalkishorek@yahoo.com	9618023478
9	**MEMBER**	**Dr.G.Tulsi RamDas** Registrar, JNTUH	das_tulsiram@yahoo.co.in	9866234645
10	**MEMBER**	**Prof. P. Jaya Prakash Rao** Nominee of Chairman APSCHE		
11	**MEMBER**	**Sri. U.V.S.N. Murthy** Nominee of Commissioner of Technical Education		9912342187
12	**MEMBER**	Nominee of South Central Regional Office, AICTE Hyderabad		
13	**MEMBER SECRETARY**	**Dr.N.V. Ramana Rao** Principal, JNTUHCEH	rao.nvr@gmail.com	**9849054319**

RESOLUTIONS OF THE GOVERNING BODY

(See Annexure-I)

The Governing Body meeting was held on **09 -08-10** at **11 AM** in the Chambers of the Principal JNTUH CEH.

The Agenda of the meeting was as follows:

ITEM 1: Welcoming the Chairman & Members of the Governing Body

ITEM 2: Brief Address by the Honourable Vice-Chancellor, JNTUH.

ITEM 3: Brief presentation about the college activities by the Principal, JNTUHCEH.

ITEM 4: Approval of Vision, Mission and SWOT Analysis and Strategic - Planning for the next four years.

ITEM 5: Approval of the Institutional Development Proposal to be Submitted to SPFU/NPIU for participation in TEQIP Phase-II.

ITEM 6: Presentation and Approval of purposes and guidelines for Utilization of four funds (Corpus Fund, Faculty Development Fund, Equipment Replacement Fund, Maintenance Fund).

ITEM 7: Approval of purposes and guidelines for utilization of IRG through Consultancy.

ITEM 8: Approval of Academic Calendar.

ITEM 9: Approval of Receipts and proposed Budget allocation to various Departments

The following members attended the meeting.

1. **Prof.B.L. Deekshatulu**, Eminent Academician, Visiting Professor, UOH – **Chairman**
2. **Mr.Ramesh Datla,** Managing Director, Elico Ltd.
3. **Mr.Sarat Chandra Babu,** Executive Director, C-DAC, Bangalore
4. **Mr.Ravi Kumar.S,** Head- Hyderabad Development Center Infosys Technologies Limited, Hyderabad
5. **Mr.Harish Chandra Prasad,** Chairman, Malaxmi Infra Ventures (India) Pvt.Ltd.
6. **Er.F.C.S. Peter,** Director General, National Academy of Construction.
7. **Dr.K.Lal Kishore,** Director R&D, JNTUH, Kukatpally
8. **Dr.G.Tulsi Ram Das,** Registrar, JNTUH
9. **Prof. P. Jaya Prakash Rao,** Nominee of Chairman APSCHE
10. **Sri. U.V.S.N. Murthy,** Nominee of Commissioner of Technical Education
11. **Dr.N.V. Ramana Rao,** Principal, JNTUHCEH – **Member Secretary**

The Following members could not attend the meeting due to personal reasons

1. Dr.Prahlada, Chief Controller, DRDO, New Delhi

2. Nominee of South Central Regional Office, AICTE Hyderabad

The Governing body approved the following items.

ITEM 4: Vision, Mission and SWOT Analysis and
Strategic - Planning for the next four years.

ITEM 5: Institutional Development Proposal to be
Submitted to SPFU/NPIU for participation in TEQIP Phase-II.

ITEM 8: Academic Calendar for UG & PG Programmes.

The Following Items are approved in principle. However the Governing Body suggested that the procedures and norms for spending should be approved by the Finance Committee.

ITEM 6: Purposes and guidelines for
Utilization of four funds (Corpus Fund, Faculty Development Fund,
Equipment Replacement Fund, Maintenance Fund).

ITEM 7: Approval of purposes and guidelines for utilization of IRG
through Consultancy.

ITEM 9: Approval of Receipts and proposed Budget allocation to various
Departments

Signature of Member Secretary

1. INSTITUTIONAL BASIC INFORMATION

1.1 Institution Identity:

- Name of the Institution : JNTUH College of Engineering Hyderabad
  Kukatpally, Hyderabad– 500 085
- Is the Institution AICTE approved? : **Yes (See Enclosure-1)**
- Furnish AICTE approval no. : F-730-50-210(E)E/ET/97
  Dt. 02-05-2008
- Type of Institution : **Govt. funded**
- Status of Institution : Constituent and Autonomous College of
  Jawaharlal Nehru Technological
  University - Hyderabad.
- Name of Head of Institution and Project Nodal Officers

Nodal Officers:

Head & Nodal Officer	Name	Phone Number +91 40	Mobile Number +91	Fax Number +91 40	E-mail
Head of the Institution	Dr.N.V. Ramana Rao	23057787	098490 54319	23057787	rao.nvr@gmail.com
Nodal Officer	Dr. G.Vijaya Kumari	23158661 – Ext- 4444	098492 73714	23057787	vijayakumari.gunta@gmail.com jntuceh_teqip@yahoo.com
Assistant Nodal Officer	Ms. P.Bhramara		098481 17630	23057787	bhramara@yahoo.com jntuceh_teqip@yahoo.com
Coordinators:					
Academic Activities	Dr. M. V. Seshagiri Rao		098493 81136	23057787	rao_vs_meduri@yahoo.com
Civil works including Environment Management	Mr. Siva Konda Reddy	32408664	093900 29625	23057787	bskreddy_246@yahoo.com
Procurement	Dr.L. Pratapa Reddy		094900 98012	23057787	pratap.fsf@gmail.com
Financial Aspects	Dr. A. V. Sitarama Raju		098493 81136	2305778	avsr_raju2005@yahoo.com
Finishing School	Dr. B. Sudheer Prem Kumar		098494 51103		bsudheerpk@yahoo.co.in
Equity Assurance Plan	Mr. N. Darga Kumar		099493 31274	23057787	ndkjntu@gmail.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
I	**B.Tech.**					
1	Civil Engineering	UG	4	1965	56 +15*	354+91*
2	Computer Science Engineering	UG	4	1984	51 +34*	
3	Electronics and Communications Engineering	UG	4	1973	52 +20*	
4	Electrical and Electronics Engineering	UG	4	1979	53 +14*	
5	Mechanical Engineering	UG	4	1965	52 +08*	
6	Metallurgical Engineering	UG	4	1989	40	
II	**M.Tech**					
1	Structural Engineering	PG	2	1990	18 + 03*	292 + 45*
2	Transportation Engineering	PG	2	1989	15 + 02*	
3	Infrastructural Engineering **	PG	2	2009	18 + 00*	
4	Geo technical Engineering	PG	2	1990	08 + 00*	
5	Electrical Power Engineering	PG	2	2004	25 + 04*	
6	Power Electronics	PG	2	2004	25 + 00*	
7	Advanced Manufacturing Systems	PG	2	2001	20 + 04*	
8	Thermal Engineering.	PG	2	1991	20 + 00*	
9	Digital Systems and Computer Electronics	PG	2	1991	25 + 04*	
10	Systems and Signal Processing	PG	2	2001	25 + 02*	
11	Embedded Systems **	PG	2	2009	25 + 00*	
12	Energy Systems	PG	2	1990	21 + 00*	
13	Computer Science	PG	2	1983	25 + 08*	
14	Information Technology	PG	2	1983	22 + 18*	
III	**Integrated Dual Degree Program (IDP, B.Tech + M.Tech / MBA) ****					
1	Civil Engineering	UG+PG	5	2009	18 / 12	89 / 60
2	Computer Science Engineering	UG+PG	5	2009	18 / 12	

3	Electronics and Communications Engineering	UG+PG	5	2009	17 / 12	
4	Electrical and Electronics Engineering	UG+PG	5	2009	18 / 12	
5	Mechanical Engineering	UG+PG	5	2009	18 / 12	
IV	**Ph.D**					
	Civil, CSE, ECE, EEE, Mechanical and Metallurgical Engineering	Ph.D	3 (Minimum)	2001	--	120

*International Students
** New programmes started in the academic year 2009-10

- **Accreditation Status of UG Programs**

  Out of the 6 programs eligible for accreditation, all programs were accredited by NBA since 2005. 2 programs have applied for renewal as the NBA accreditation period expired in Feb, 2010 **(See Enclosure-2)**

Title of UG Programmes being offered	**Whether eligible for accreditation or not**	**Whether accredited as on 31st March.2010**	**Whether "Applied for" as on 31st March 2010**
Computer Science Engineering	Yes	Yes	NA
Mechanical Engineering	Yes	Yes	NA
Metallurgical Engineering	Yes	Yes	NA
Electronics and Communications Engineering	Yes	Yes	NA
Electrical and Electronics Engineering	Yes	Till Feb'2010	Applied for renewal in Aug 2010
Civil Engineering	Yes	Till Feb'2010	Applied for renewal in Aug 2010

- **Accreditation Status of PG Programs**

  Out of the 12 programs eligible for accreditation, 6 programs have applied for recognition by NBA. The details are as follows **(See Enclosure-3).**

Title of PG Programmes being offered	**Whether eligible for accreditation or not**	**Whether accredited as on 31st March.2010**	**Whether "Applied for" as on 31st March 2010**
Civil Engineering			
Structural Engineering	Yes	No	"Applied for" in Aug 2010
Transportation Engineering	Yes	No	No
Infrastructural Engineering	No	No	NA
Geo technical Engineering	Yes	No	No

Electrical and Electronics Engineering			
Electrical Power Engineering	Yes	No	"Applied for" in Aug 2010
Power Electronics	Yes	No	"Applied for" in Aug 2010
Mechanical Engineering			
Advanced Manufacturing Systems	Yes	No	No
Thermal Engineering.	Yes	No	"Applied for" in Aug 2010
Energy Systems	Yes	No	No
Electronics and Communications Engineering			
Digital Systems and Computer Electronics	Yes	No	"Applied for" in Aug 2010
Systems and Signal Processing	Yes	No	No
Embedded Systems	No	No	NA
Computer Science and Engineering			
Computer Science	Yes	No	"Applied for" in Aug 2010
Information Technology	Yes	No	No

1.3 Faculty Status (Regular / Contract Faculty as on March 31st 2010)

The total faculty positions sanctioned as per AICTE norms is 148. The total faculty on regular basis is 123. For the newly introduced courses contract faculty are appointed .

Faculty Rank	No of Sanctioned Regular Post	Present Status: Number in Position by Highest Qulification												Total No of regular faculty in position	Total vacancies	Total No of contract faciluty in position
		Doctoral Degree				Masters Degree				Bachelor Degree						
		Engg Discipline		Other Disciplines		Engg Disciplines		Other Disciplines		Engg Disciplines		Other Disciplines				
		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.	26	25	2	1	--	--	--	--	--	--	--	--	--	26	---	02
Asso Prof.	34	15	--	4	--	12	--	--	--	--	--	--	--	31	3	--
Asst. Prog	68	27	--	3		26	--	--	--	1	--	--	--	57	11	--
Lec	--	--	--	--	--	15	--	--	--	--	--	--	--	--	--	15*
Total	128	67	2	8	--	53	--	--	--	--	--	--	--	114	14	15

* For Self Supporting PG and newly introduced PG Specializations

1.4 Baseline Data

Sl.No	Parameters	
1	Total Strength of students in all programmes and all years of study in the year 2009 – 10	2907*
2	Total Women students in all programmes and all years of study in the year '2009 – 10	1064
3	Total SC students in all programmes and all years of study in the year '2009 – 10	371
4	Total ST students in all programmes and all years of study in the year '2009 – 10	151
5	Total OBC students in all programmes and all years of study in the year '2009 – 10	1116
6	Number of fully functional P-4 and above level computers available for students in the year 2009 -10	764
7	Total number of syllabus Text books and Reference books available in library for UG & PG students in the year 2009-10	58844
8	% of UG students placed through campus interviews in the year 2009-2010	92 %
9	% of PG students placed through campus interviews in the year 2009-10	20 %
10	% of High quality under graduates (> 75% marks) passed out in the year 2009-10	74%
11	% of High quality Post graduates (> 75% marks) passed out in the year 2009-10	57 %
12	Number of research publications in Indian refereed Journals in the year 2009-10	227
13	Number of research publications in International refereed Journals in the year 2009-10	87
14	Number of patents obtained in the year 2009-10	Nil
15	Number of patents filled in the year 2009-10	1
16	Number of sponsored research projects completed in the year 2009-10	3
17	The transition rate of students in % from 1st year to 2nd year in the year 2009-10 for : (i) All Students (ii) SC (iii) ST (iv) OBC	 90.3% 76.3% 68.7% 89.6%
18	IRG from students fee & other charges in the year 2009-10 (Rs. in lakhs)	724.00
19	IRG from commercialization of R & D products , consultancy & other sources in the year 2009-10 (Rs. in lakhs)	165.86
20	Total IRG in the year 2009-10 (Rs. in lakhs)	899.86
21	Total annual recurring expenditure of the applicant entity in the year, 2009-10 (Rs. In lakhs)	473.79
22	Number of joint publications with National authors in the year 2009-10	12
23	Number of Joint Publications with International authors in the year 2009-10	10
24	Number of R&D products commercialized in the year 2009-10	Nil
25	Number of Joint MTech programmes with institutions undertaken in the year 2009-10	01
26	Number of Joint MTech Programmes with industry undertaken in the year 2009-10	01
27	Number of Joint PhD with institutions undertaken in the year 2009-10	10
28	Number of Joint PhD with Industry undertaken in the year 2009-10	6

29	Number of Joint consultancies undertaken with Institutions in the year 2009-10	2
30	Number of Joint consultancies undertaken with Industry in the year 2009-10	3

* UG students – 1328

PG Students – 458 + 107(International Students) = 565

Recently Started Courses (IDP) – 149, PG (2 disciplines- Self Supporting) - 108

M.Tech. (PTPG) – 757(Part time)

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 academic and non-academic reforms given below:	Yes	Yes
	• Implementation of Curricular Reforms		Yes
	• Exercise of autonomies		Yes
	• Establishment of Corpus Fund, Faculty Development Fund, Equipment Replacement Fund and Maintenance Fund		Yes
	• Generation, retention and utilization of revenue generated through variety of activities		Yes
	• Filling up all existing teaching and staff vacancies		Yes
	• Delegation of decision making powers to senior functionaries with accountability		Yes
	• Improve Student Performance Evaluation		Yes
	• Implement performance appraisal of faculty by students		Yes
	• Provide faculty incentive for continuing education(CE), consultancy and R&D		Yes
	• Obtaining accreditation		Yes
2.	Availability of academic autonomy as recognized by UG & PG programmes	Yes	Applied for * (Obtained UGC 2f Status)
3.	Presence of Board of Governors with an eminent academician or industrialist as the Chairperson	Yes	yes
4.	Percentage of eligible UG programmes accredited or applied for # $	60%	100%
5.	Percentage of eligible PG programmes accredited or applied for $	40%	50%
6.	Cumulative number of Ph.Ds produced in the last three academic years (2007-08, 2008-09, 2009-10) or Cumulative number of MTech produced in the last three academic years (2007-08,2008-09,2009-10) **(See Annexure-II)**	5 50	Yes Yes
7.	Faculty positions filled on regular full time basis as percentage of the total faculty positions sanctioned in accordance with the AICTE prescribed students to faculty ratio	65%	Yes More than 90 %
8.	Percentage of regular faculty with PhD in engineering as percentage of total faculty	15%	62 %

*** See Enclosure-4 # See Enclosure-2 $ See Enclosure-3**

2 INSTITUTIONAL DEVELOPMENT PROPOSAL (IDP)

2.1 Give the executive summary of the IDP

THE PROPOSAL

JNTUH College of Engineering Hyderabad **(JNTUHCEH)** is submitting this proposal to participate in the Technical Education Quality Improvement Program (TEQIP) Phase–II under **Sub-Component 1.2 : Scaling Up PG Education and Demand Driven R, D and I** for implementation during 2010 – 2014.

BACKGROUND:

The proposal is built on the strengths it has gained from TEQIP – Phase I as a lead Institute while maintaining its continued focus on the "Enhancement of Quality in Technical Education" of TEQIP Project. The JNTUHCEH with a history of over 38 years in technical education offering B.Tech, M.Tech. and Ph. D. Programs in six disciplines of Engineering has achieved a top-tier status among Engineering Colleges in the Country. Recent Survey of Best Engineering Colleges in India by outlook Magazine has placed the college in the list of top 40 colleges in India. While rankings fluctuate, the college is widely perceived as a leading institute for the Undergraduate programs offered by it with the top 2000 rank holders of over 1.5 lakh students appearing for the state wide entrance Examination EAMCET making it to the admission into the various B.Tech. programs offered of the college. The primary goal of the College over the next four years is to build upon the achievements to date and secure a position in the top ten Engineering Colleges in the country.

COHERENCE WITH NATION AND STATE PRIORITIES:

The College has been sustaining and improving the quality of its UG programs. It now proposes to expand the scope, quality and multidisciplinary character of its PG and Ph. D programs while ensuring equity. The proposal also complements the State's action to implement a strong model that combines improved access to technical education with achieving excellence by synergizing research and teaching. As reflected in the planning, the timing of the proposed activities is ideal when India, under a broad policy of improving access to technical education is in the process of building a broader system for offering multidisciplinary and research programs to take the benefits of research and innovation to teaching. The policy would charge the leading Institutes like JNTUHCEH with the task of creating an enhanced technical education system for the country. Implementing this proposal will enable JNTUHCEH to align its proposed plan with the national and state priorities.

KEY FEATURES OF THE PROPOSAL

- Scaling up of **PG Enrollment** by establishing need based, multidisciplinary and innovative and joint PG programs and revamping existing Programs. The programs proposed to be started are **Material Technology** (Metallurgy Engg Dept. in 2011-12)**, Design Engineering** (Mechanical Engg in 2010 -11)**,** Specialized PG program on Advanced Computing and Scientific Computing Concepts (**Joint Program**, CSE and C-DAC in 2011 - 12)**, Embedded Systems** (Revamp **Interdisciplinary** Program with ECE, CSE and EEE Dept), 5 year Integrated Double Degree Masters Programs with Blekinge Institute of Technology, Sweden leading to B.Tech + M.Tech (**Innovative Program**) in the Specializations of **Computer Science, Software Engineering and Telecommunications Systems.**

- **Fellowships** to attract the best and brightest Students to the PG and Ph. D programs. 30 Ph.D and 50 PG Assistantships are proposed in various specializations of Civil, CSE, ECE, EEE, Mechanical and Metallurgical Engineering Departments

- Establish unique and distinctive research facilities in identified thrust areas fostering demand driven Research, Development and Innovation. The Facilities are **Multicore and high Performance Computing Lab and Computational Fluid Dynamics Lab.**

- Establish **Seven** new specialized **PG labs** identified to support practicum and required hands-on for the newly proposed programs for all the new programs.
- **Modernization** and Removal of Obsolescence in the **Nine** of the existing laboratories identified to keep abreast with the latest technological advancements.
- Establish **Virtual Classrooms, Virtual and Remote labs** to enhance the Teaching Learning Process through blended learning and Information Communication Technology (ICT).
- Faculty Development Plan to enhance the **Teaching and Research competencies** of the faculty.
- Enhancement of Industry Institute Interaction, exploring **Technology Incubation**, joint publications, research guidance and funding and establishment of **Innovation Centre**.
- Conduct **Bridge Courses** to enhance the employability of the students.
- Conduct **Finishing Schools** and all other processes that may deem fit to ensure equity to support socially and academically weak students to improve the pass percentage.
- Employ **Disclosure Management Framework** for transparency in implementing all the activities of the project.

The estimated budget for the Key activities proposed in this IDP is **Rs. 14.90 crores**.

EXPECTED OUTCOMES:

The proposal is consistent with the core principles of the TEQIP–II Project, State objectives and is built on the strengths and opportunities of the College analyzing its weakness and threats. The proposal is a collective and comprehensive effort of all the staff members of the college towards realizing the vision of the College. Approval of this proposal will allow the College to forge ahead on a creative and innovative path that will ultimately lead all the students from the college demonstrating excellence in technical education by 2014. The Governing Body of the College is committed to adopt academic and non-academic reforms required for effective implementation of the proposed plan from time to time. The College shall pass on the benefits of the TEQIP project grant such as FDP, joint Research guidance, publication of papers through interaction with the neighboring engineering institutions on a regular basis. Sustenance plan is devised to continue the activities initiated during the project.

2.2.1 Provide the details (in terms of methodology used, analysis carried out of the data and information collected and inferences derived with respect to strengths, weaknesses, opportunities and threats) of SWOT analysis (see Annex V of the PIP) carried out.

The College has been engaged in a complete strategic planning exercise. The process consisted of multiple brainstorming sessions as well as formal feedback exercises to capture insights, suggestions and recommendations from various stake holders viz. Faculty, Students, Industry, and Parents. These exercises that spanned over three weeks involved majority of the faculty (98 people), smaller working sessions with Heads of the Departments and Senior staff (30 people), sessions with representatives of the students (120 people), sessions with representatives of the non-teaching staff (50 people) and interviews/E-mail input with alumni. The redefined mission and vision statements, SWOT analysis and the strategic directions of the institution for the next 4 years are a direct outcome of this extensive collective reflection process. These outcomes are also reviewed and the proposals are approved by the Governing Body. The outcome of this process is re-circulated to the responding groups and their feedback is incorporated in the SWOT analysis presented here. The Summary of the inputs collected from different groups of Stakeholders is as follows:

Student Group:

Almost all the students expressed that the Brand Name of JNTUH CEH is major strength of the college. They also expressed satisfaction on the proactive curriculum and employability opportunities. It was however felt that special training for soft skills and short term skill development courses would add more value to the programs both in securing long term and short term jobs. They were looking for a more lively campus strengthening interactions and networking among various disciplines.

Faculty Group:

The Faculty found that the major strength of the institute lies in attracting the best and brightest students and the autonomous status of the institute providing flexibility in curriculum design and delivery. They however expressed concern over the depletion of skilled manpower in the laboratories to support conduct of the experiments and insufficient funding to modernize and provide hands-on for the newly introduced courses. The facilities for conduct of research and fellowships to expedite research work was desired by almost all the faculty. The synergy of research outcomes and teaching learning processes is made as the future vision of the college.

Industry Input:

The industries which employed the students of the college felt that the students were easily adaptable, had good grasp of the technical concepts. They however felt that additional training of soft skills and behavioral skills will make them more industry ready.

Parents Inputs:

The parents are proud of the brand name of the college and look forward for more prosperous careers for their wards.

VISION

To be recognized as one of the top 10 institutes in the country offering Quality technical education, sustaining and improving its repute of Quality UG programmes, expanding and enhancing need based and quality PG and research programmes with global outlook, synergizing teaching and research for societal relevance.

MISSION

- *To identify technological advancements and build the **right level of skills at the right time** contributing to the industrial and national growth.*
- *To identify and keep abreast with the **state of the art technology maintaining** its legacy of striving for excellence in higher education.*
- *To promote **world class research** of local relevance to society*
- *With a research community of professors, research fellows and research centres, **expand the scale, quality and multidisciplinary** character of its research activities.*
- *With a **global outlook** strive for collaborations to network with International Universities and National Institutes of Research and Higher Learning.*

GAP ANALYSIS:

From being an institute reputed for its UG programs to become recognized globally as a comprehensive institute offering quality and innovative UG, PG, Ph. D. programs the college has conducted SWOT Analysis.

The details of the SWOT analysis conducted using the process described above has the outcomes as summarized below

STRENGTHS

- **The Brand name JNTUH** and the reputation compared to other state university colleges. It has been graded as the top college in AP as per survey 2010 of outlook magazine
- **Diversity** of academic Background of Faculty members – Each discipline has at least four Specialization. There are 6 B.Tech. specializations and 14 M.Tech. specializations.
- **Highly Qualified and Competent Faculty**- More than 62% Ph.Ds.
- **Good Campus Placement** – More than 90% of UG graduates placed with average salary of 3.5 lakhs per annum.
- **Quality** and adaptiveness of the **Curriculum.** Revised on regular basis once in two year.
- **Autonomous College:** The institute enjoys complete academic autonomy and has been establishing new PG programs and incorporating academic reforms.
- **Proven record of successful completion of projects** The institute has received sponsored research projects from UGC, MHRD, AICTE and TEQIP and has been identified as lead institute in TEQIP Phase-I.
- **Accreditation:** All UG programs of Engineering departments, viz., Civil, Mechanical, Electronics and Communications, Electrical and Electronics, Computer Science and Metallurgy have been accredited by NBA since 2005.
- **Research potential:** Centres of excellence in identified thrust areas viz., in CAD and CAE, e-learning, Energy studies and Transportation are established to advance research. Department of Chemistry and Centre for Energy Studies have received recognition of their research work by the way of patents
- **Industrial consultancy:** Generating a revenue of over rupees one crore per annum.
- **International networking:** Networking with International universities to offer specialized programs the courses are offered with credit transfer.
- **Industry collaborations:** Industry based PG programs are offered.

WEAKNESSES

- **Limited Array of Courses:** Many of the disciplines of Engineering now offer traditional PG specializations. Need based and industry oriented PG programs are to be started. Inadequate match between education received by graduates and job requirements.
- **Limited full time Research Scholars**: Due to plenty of job opportunities outside, unable to attract the research scholars on full time basis. There is also a need to create interest among engineers for pursuing either research degree programs or teaching careers.
- **Limited funding for infrastructure upgradation:** With increased number of PG courses, the

increase in resources like specialized labs there is insufficient match with the fast changing technological advancement.

- **Limited Industry Institute Interaction :** Need to strengthen to collaborative PG programs, consultancy and internships and joint Research activity.
- **FDP is self driven:** No formal mechanism for faculty upgradation to meet the demands of curriculum changes and specializations offered and pedagogy.
- **Absence of skill upgradation programs of supporting staff:** With changing technologies and the modernization of equipment, skill up-gradation of technical staff has become a necessity.
- **Limited library for research:** The library is good for instructional purposes. There is a need for more online databases, external resources, Interlibrary loans, and other means of drawing on the resources of large libraries.
- **Insufficient funding for:**
  - Supporting Travel allowance for presenting Technical papers with in or outside country.
  - Supporting UG & PG Projects which motivate students towards interdisciplinary and live projects.
  - Supporting Under Graduate Research
  - Attracting more qualified and experience contract faculty.

The weaknesses identified are mitigated by the strategic goals identified for the next four years.

OPPORTUNITIES

- **Strategic Location:** Being located in Hyderabad, with various public and private sector industries, state and central government R&D establishments and defence laboratories, possible exposure of faculty and students to the latest state of the art technologies in science and engineering.
- **Demand for Ph. D and PG Programs:** With the govt. Policy of increasing access to engineering education, there is huge demand for qualified graduates for teaching and research.
- **Global Networking:** Many foreign universities and Industries are willing to collaborate to offer specialized programs. Partnerships with institutions of international repute for offering university courses in various disciplines of engineering and faculty exchange are underway. Some of the institutes where collaborations are being worked out are BTH, Sweden, Cork Institute of Technology, Ireland and University of Westminster, London.
- **Strategic Alliances:** More tie-ups and partnerships with local employers possible with those in the private, non-profit, and public sectors – so that our students are more appealing to them.
- **Technology Enabled Learning:** Availability of Flexible learning and adoption of new Information and Communication Technologies to increase the learnability and accessibility.
- **e-Content:** Availability of standardized e-learning content to enable quick FDP.
- **Collaborations:** In the scenario of globalization and as the city of Hyderabad is accessible to entire world, there is a large scope for entering into Collaborations with various Indian and foreign universities and other R&D establishments for various exchange programs and R&D activities.

THREATS:

- With the proposals of new deemed and **foreign universities** and centrally funded institutes such as IIT coming up, the infrastructure and programs may attract talented students and Faculty.
- Due to more employable opportunities and **attractive pay packages** from IT and other industries, quality of students entering the PG and research programs is in threat.
- Immediate replacement of faculty and staff as and when they retire is not possible due to long recruitment cycles, which hamper the routine activities and further developmental activities of the institute.

2.2.2 Based on SWOT analysis, provide the strategic plan developed for institutional development.

The College has identified the following strategic Goals for the next four years.

1. Scaling Up of Postgraduate education and Research.
2. Sustain and improve the Quality and Relevance of Programs offered.
3. Promote Research aligned with the National Research Priorities enhancing Knowledge and Innovations
4. Improve Industry Institute Interaction and relations with Community and Society.
5. Improve Faculty Teaching and Research Competency
6. Devise Equity Action Plan to help socially and academically weak Students and Staff.
7. Employ Implementation activities and Procedures to comply with Environment Management standards.
8. Devise Disclosure Management Framework for all the activities during the period.

2.2.3 Show how the results of SWOT analysis are linked to the key activities proposed in the proposal.

The Strategic planning has brought out clearly the weaknesses and opportunities. Methods are explored to convert the available opportunities to the advantage of the College using its strengths. Action Plan are devised to eliminate weaknesses and where not possible the weaknesses are minimized through programs such as remedial coaching, FDP and equity plan. When a weakness could not be eliminated, we tried to meet the Goals taking these weaknesses as constraints. The college being a government funded institute faces challenges in terms of modernization of the laboratories to the fast changing technologies. The budget for infrastructural Improvement for Teaching, training and learning requirement and FDP is therefore high when compared to other components. Similarly the college provides access and equal opportunities to all sections of the community and hence a separate budget is proposed for implementing equity plan.

2.3. State the specific objectives and expected results of your proposal in terms of, "Scaling up Postgraduate Education and demand driven Research & Development and Innovation". These objective and results should be linked to the SWOT analysis.

Strategic area- Objectives	Linkage to SWOT	Key result areas/metrics
<u>Scaling up of PG programs</u> 1. Develop need based postgraduate programs that complement the traditional programs and leverage the unique attributes of the college. 2. Develop Joint degree programs with selected international universities. 3. Start Integrated Programs leading to UG + PG in an accelerated time period. 4. Develop interdisciplinary postgraduate programs. 5. Develop part time programs for working aspirants 6. Use of Information and Communication Technology (ICT) to enhance quality and access to education	**Strengths:** ● Diversity of Faculty ● Qualifications of the Faculty ● Academic Autonomy **Weaknesses** ● Limited Funding for Infrastructure ● Limited Funding for PG fellowships **Opportunities** ● Demand of PG programs due to increased access and Faculty requirements ● Strategic Location & Industry alliances ● Foreign Collaborations **Threats** ● Foreign Universities ● Centrally Funded Institutes	● Increase in PG by 50% at the end of four years.

Demand driven Research 1. Increase Doctoral and Research Assistantships. 2. Develop unique research facilities and programs that provide strategic advantage to faculty and students 3. Exploit interdisciplinary culture and actively seek new collaborations with academic and industry partners. 4. Stimulate entrepreneurship amongst faculty and students by providing access to knowledge required to commercialize processes and products. 5. Expeditious Provision of Research Results to Society 6. Upgrade the research support system for talented young researchers 7. Increase student engagement with faculty in research or creative activity, especially at the undergraduate level	**Strengths:** ● Varied Specialization ● Published Work ● Quality of Students ● International Networking ● Multidisciplinary Potential **Weaknesses:** ● Limited Funding to support Fellowships ● Limited Funding for specialized research labs ● No Funding for UG and PG Research ● Limited funding to travel , Publish, and network to upgrade and Collaborate with Research Institutes ● Funding to commercialize and train for patents **Opportunities** ● Strategic Location w.r.t. Research Institutes. ● Joint Supervision to Network Globally ● Demand for faculty with Ph.D Qualifications **Threats** ● Attractive pay packages in service sector may discourage research with small fellowships	● Increase in Publications, Patents, Funding from Industry and Government and R&D Institutions. ● Scaling up Ph. D enrollment by about 40 %
Industry Institute Interaction 1. Industry based Projects for Ph.D and PG programs 2. Industry Chairs 3. Tailor made masters programs to suit Industry needs. 4. Short-term orientation for Students and Faculty about the Industry Practices 5. Conduct in-situ education programs for Industry and Ph.D enrolment of	**Strengths** ● Proven Record of Successful completion of projects ● Faculty Qualification ● Industry Collaborative PG programs ● Good Placement Record **Weaknesses** ● Insufficient Funding to develop State of the Labs ● Limited Funding for travel and other logistic support for	● Increased Employability ● Translation of research results to provide effective solutions to Industry problems. ● Joint Research Projects. ● Pass on the benefits of the TEQIP project grant such as FDP, joint Research guidance, publication of

eligible industry people. 6. Induction Programs for Students selected Campus Placement. 7. Adjunct Faculty from Industry and Faculty deputation 8. Joint Research Projects 9. Conduct of Finishing Schools (Vacation Period) Technology Incubation.	interactions. ● Limited Funding to motivate students and incidental expenses for carrying out Live and need based projects. **Opportunities** ● Strategic Location and Alliances **Threats** ● Sustenance	papers through interaction with the neighbouring engineering institutions on a regular basis.

2.4. Provide an action plan for scaling up enrollment into Masters and Doctoral programmes (include measures to attract qualified students and maintain high quality standards)

- **Strengthening New PG programs:**

Many new PG programs have been initiated in the academic year 2009-2010 as a consequence of impact of TEQIP–I Reforms, taking into account the available opportunities and Strengths of the institute. The existing programmes are being greatly revamped to meet the Industry needs. The programmes started are

1. **Embedded Systems** (Interdisciplinary among ECE,CSE,EEE)

2. **Infrastructural Engineering** in Civil Engineering

3. **Integrated Dual Degree Programs.** Five year Integrated Dual Degree (UG+ PG) in five disciplines of Engineering with intake of 30.

- **Starting New PG programs:**

New programs are proposed, taking into account the Industry needs and global trends. Two additional PG specializations with an intake of 30 in each specialization are proposed.

1. **Design Engineering** in Mechanical Engineering from the Academic year 2010-2011.

   Justification: The Department of Mechanical Engg has faculty specialized in Robot Kinematics, Composite Materials and Finite Element analysis. The specialization in Design Engineering is in high demand in and around Hyderabad as no other Institute offers the specialization. The employability opportunities of these graduates is high due to the multidisciplinary character of the course.

2. **Material Technology** in Metallurgical Engineering from the Academic year 2011-2012.

   Justification: The Institute is one among the few colleges offering Metallurgical engineering with Faculty Specialized in Material Technology. The department has been offering UG programs and the Course if provided with Laboratory Facilities would be a Unique Program Catering to the Industrial Needs of the region as well as state. The Department is already working closely with DMRL (Defence Material Research Laboratories) Hyderabad.

3. **Integrated Dual Degree Masters Programs.** Five year Integrated Dual Degree (UG+PG) in collaboration with BTH Sweden in three specializations, namely, Computer Science, Software Engineering and Telecommunication Systems, with a total intake of 60 (20 each).

4. A specialized PG Program is proposed to be started in 2011 -2012 in CSE in collaboration with CDAC in Advanced Computing Concepts or Scientific Computing Concepts. With the current trends in computing a specialization involving Cloud and High Performance Computing is in great demand. All Major industries from Microsoft, Amazon, Google etc. are now doing research on how computing can be provided as a utility. With the Gartner prediction the trend is also that there is great demand for graduates with Knowledge on distributed computing, It is therefore proposed to start need based and Joint Program PG program in computer science in the next academic year. The proposal is being put up in the BoS meeting in September 2010.

- **Scaling Up Doctoral Enrolment**

  It is targeted to increase the full time research fellowships by 30 numbers in various specializations of ECE, CSE, EEE, Civil Engineering and Mechanical Engineering by the end of the project from the present status of 6 numbers apart from part time enrolment of Ph. D Scholars.

- **Modernization of PG Labs**

  To keep abreast with the technological advancements the following PG labs are proposed to be modernized.

  - **Computational Techniques Lab** in Mechanical Engg
  - **CAD Lab** in Mechanical Engg Department
  - **Geo-Technical Engg Lab** in Civil Engg Department
  - **Simulation Lab** in ECE Department
  - **Signal Processing Lab** in ECE Department
  - **Power Electronics and Drives Lab** in EEE Department
  - **Information Security Lab** in CSE Department
  - **Data Mining and Warehousing Lab** in CSE Department
  - **Software Engineering Lab** in CSE Department.

- **Establishment of New PG Labs:**

  To enhance the quality of the PG programs and encourage live projects the following new labs are proposed in various departments

  - **Adhoc and Sensor Networks Lab** in CSE Department.
  - **Wireless and Mobile Computing Lab** in CSE Department.

- **Advanced Communications and Networks Lab** in ECE Department.
- **Power Systems Lab** in EEE Department
- **Non Destructive Testing Lab** in Civil Engineering Department
- **Kinematics and Dynamics Lab** in Mechanical Engineering Department
- **Advanced Physical Metallurgy Lab** in Metallurgy Lab

- **Appointment of Visiting and Adjunct Faculty:**

To benefit from the experience of the industry and academic experts, it is proposed to appoint visiting and adjunct faculty especially in the areas of specialization of the new courses proposed.

- **Attract quality Ph.D and PG Scholars:**

To attract best students for the PG and Ph. D level, fellowships, incentives such as teaching assistance ships, pedagogical training and training abroad are proposed based on merit and relevance.

BAR CHART OF THE KEY ACTIVITIES PROPOSED FOR THE ACTION PLAN

S No	Key Activity: Scaling up of PG and Ph.D enrollment	Project Months															
		1-3(Dec)	4-6(Mar)	7-9(Jun)	10-12(sept)	13-15 (Dec)	16-18(Mar)	19-21(Jun)	22-24(sept)	25-27(Dec)	28-30(Mar)	31-33(Jun)	34-36(sept)	37-39(Dec)	40-42(Mar)	43-45(Jun)	46-48(sept)
I	**Increase of enrollment in Masters and Doctoral Programs**																
1	**Introducing New Programs: Material Technology**																
2	**Starting Joint Masters Programs: Advanced Computing**																
3	**Starting Joint Doctoral Programs**																
4	**Teaching Assistance ships to Non GATE Masters Students**																
5	**Research Assistance ships to Ph.D scholars**																
6	**UG Research Projects / Workshops**																
7	**Travel Grants for Ph.D students**																
8	**Pedagogy Training for Doctoral Students**																
II	**Establishment of Labs**																
1	**Modernization of New Labs**																
	Civil:																

	EEE																
	ECE																
	Mech																
2	**New Lab for PG Program**																
	Civil:																
	CSE																
	EEE																
	ECE																
	Mech																
	Metallurgy																
	Remote lab in Computer Networks Security																
3	**New Lab / Research Lab**																
	CSE																
	ECE																
	Mech																
4	**Recruitment of Consultancy Services**																
5	**Additional Faculty Appointment**																
6.	**Virtual Class room**																
III	**Enhancing Quality of Masters and Doctoral Programs**																
1	**Industry Visits**																
2	**Collaborative R&D Projects**																
3	**Pedagogy Training**																
4	**BoS meetings for New Programs**																
5	**BoS meetings for Existing Programs**																
6	**Strengthening of Libraries**																
7	**Minor Civil works and Refurbishment of Labs and Class rooms**																
8	**Entering MoUs with institutes for joint PG and Ph.D programs**																

2.5. Provide an action plan for improving collaboration with Industry.

The College proposes to significantly enhance the Industry Institute Interactions. The Detailed action Plan is as follows.

A1. To organize **monthly speaker series** for each of 4-5 key areas identified.

A2. To establish **Interdisciplinary student teams** in consultation with industry mentors with a faculty advisor assigned to each team

A3. To establish **Industry liaison cell** with student, faculty representatives to work with industry to identify need based courses

A4. Industry specific **research projects** to be identified – proactively using market needs and student/faculty competencies and their ability to solve industry specific engineering challenges.

A5. Strengthen **Entrepreneurship cell** with focus on boot camps, periodic seminar on technology transfers, industry trends, establishing linkages to other student communities

A6. To plan and execute industry/cross i**nstitutional day**

A7. Student faculty **interaction** seminar.

A8. Establish **continuing education** cell , develop and deliver industry specific short term courses (1-3 days) in consultation with the industry

A9. In the second year, plan for 2 week long **finish school** program with local industry experts being part of delivery faculty – create an incentive for the industry to participate in the Governance Body

Expected Outcomes: The expected outcomes of the Industry Institute Interaction are

- Funding for Research Projects
- Translation of Ideas to Products
- Strengthen Students Internships
- Research Fellowships
- Technology Incubation
- Commercialization of Research Outcome

BAR CHART OF THE KEY ACTIVITIES PROPOSED FOR THE ACTION PLAN

S. No.	Key Activities: Improving Collaboration with Industry	Project Months															
		1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	43-45	46-48
1	**Establishment of Industry Liaison cell**																
2	**Establishment of continuing education cell**																
3	**Strengthening Entrepreneurship cell**																
4	**Bridge Course**																
5	**Interaction Seminars**																
6	**Identification of Areas monthly Speaker Series**																
7	**Establishment of Innovation Centre**																

2.6 Provide an action plan for:

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

Research Fellowships: It is targeted to increase the full time research fellowships by 40 numbers in various specializations by the end of the project from the present status of 6 numbers.

Establishment of research labs: To promote multidisciplinary research specialized research labs in identified areas such as **Multicore and High Performance Computing** Lab in CSE Department **Computational Fluid Dynamics Lab** in Mechanical Engineering Department.

Justification : With the focus on hardware, and increasing processor counts, there is increasing need to understand the new complexities of application design, debug, and **optimization in multi-core systems**. In order to take advantage of the additional processing power that multi-core systems offer, new development tools are needed that allow the applications to change as well. Unless we solve this programming problem, users won't see any speed advantage in new microprocessors. A promising potential solution is to take human programmers out of the loop as much as possible: rather than have individual programmers work out how to make their applications run across two, four, or more cores, the messy details could be left to compilers, the software used to convert high-level programming languages into the machine code a computer can understand. All the **major software and chip companies**, along with many academic researchers, are working to develop compilers that can handle such tasks. The biggest obstacle is that it's difficult to identify the parts of a program that don't

depend on other parts, so that a core won't be left idle while it waits for some piece of data. Simply persuading developers to write cleaner programs, with well-defined interfaces between blocks of code, would make the job much easier. The research lab can also offer services to support developers/researchers in porting applications of **various domains**. Bioinformatics and Life Sciences, Datamining and analytics, Imaging and Computing Vision and Weather Atmospheric Modeling and medical Imaging.

Justification for the establishment of **Computational Fluid Dynamics Lab**: Computational Fluid Dynamics is the latest tool to model, design and analyze the complicated, real life, fluid flow problems. With lot of **potential collaborative research opportunities** with **industries** like Tecumseh India Ltd and **R & D establishments** like ASL, DRDO, Hyderabad, the establishment of high performance CFD lab with latest software like ANSYS, CFX and with additional modules of Turbo Grid will benefit PG, Ph.D and faculty pursuing research. In addition, this will enable faculty to master in these computational tools and train the faculty of the surrounding colleges through **informal networking** which has high demand. These activities will evolve into the development of **centre of excellence** in the field of Computational Fluid Dynamics in the Department of Mechanical Engineering.

Organization and Attendance of Conferences and Workshops: Provide Travel grant and support for publication of research work, networking and collaboration with Institutes of Research and Industry.

Training for Patenting Work: Special short term workshops and training programs are proposed to be organized to faculty so that they are equipped with suitable knowledge of the processes to translate their ideas and research to socially useful and industry relevant products.

2.6.2 Developing research interest among undergraduate students

Establishing Innovation Centre: College wide Challenge of Innovative UG Research is proposed with the establishment of **Innovation Centre** in Collaboration with industries to translate ideas to products. Academic reforms to work on credit based course in Innovation Lab is also proposed to be placed before BoS.

Research Awards: Introduction of Best UG, PG and Best **Interdisciplinary projects** adjudged by experts from Industry and Academia are proposed annually.

Funding **minor research projects** motivating interdisciplinary research at UG level is proposed for atleast 5 projects per year.

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

Joint Supervision: To jointly supervise PG thesis work and Ph.D with all the MoU foreign Institutes. MoU has been entered with BTH, Sweden. Collaborations are being worked with other Universities, namely Cork Institute of Technology, Ireland, University of West Minster, London.

Industry Collaboration: By the end of two years it is proposed that through interactions by way of monthly speaker series and Industrial Visits the problems of the Industry would be identified and MoU for joint research in 4 -5 key areas identifies shall be taken up.

Joint Publications with networked Research and Academic Institutes. Several part time scholars of the college are working with co supervision from Industry and other academic

Institutes/ Colleges. Interdisciplinary Research would be enhanced through these collaborations.

Expected Outcomes: The proposal is expected to significantly

- increase the publications by the faculty
- Understand and Research on the Problems of the Industry
- Secure Research Projects
- Apply for patents
- Commercialize the research results to translate the benefits of the research to products of relevance.

BAR CHART OF THE KEY ACTIVITIES PROPOSED FOR THE ACTION PLAN

S. No.	Key Activities: Enhancing Research	Project Months															
		1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	43-45	46-48
1	**Creation of UG research Fund**																
2	**Research Awards for UG and PG**																
3	**Organization of Workshops, Seminars and Conferences**																
4	**Entering MoUs**																
5	**Collaborative R & D projects**																

2.7 Attach the summary of Training Needs Analysis carried out. Also, provide Faculty Development Plan from the first 18 months to achieve improved competence based on Training Needs Analysis (TNA) in the following areas.

2.7.1 Basic and advanced pedagogy training

With the availability of voluminous information on the web and other sources, availability of technologies such as ICT, it has been identified that there is an paradigm shift in the teaching learning process. Learning is now more of learning centric rather than teacher Centric. The students are now looking towards the teacher as a facilitator for blended learning. It is therefore proposed to train all the members of faculty in two phases on the Pedagogical Aspects. The training Schedule / Convenient Dates for this training is enclosed in **Annexure – III**

In addition to pedagogical plan management and capacity building training plan is proposed for all the professors and faculty in the administrative works for the effective institutional management is prepared for the next 18 months.

2.7.2 Subject / domain knowledge enhancement

With the technological advancements in various departments, curriculum changes and research methodologies, the Heads of the departments have submitted Training Need Requirements of the faculty of the Department. The requirements are consolidated and prioritized by the principal and TNA for the next 18 months have been arrived at as enclosed in **Annexure - IV**

2.7.3 Attendance in activities such as workshops, seminars, etc.

The faculty members have identified about 25 workshops and seminars in various disciplines to upgrade and network with various experts and Institutes in their areas of specialization and other areas where advancements are made.

2.7.4 Improvement in faculty qualifications.

There are about 30 faculty members who have registered for Ph.D in the college. These Faculty members would be supported by way of six month leave and financial funding for publication, attendance of Conferences and training abroad.

2.7.5 Improving research capabilities

Special Training Programs to identify methodologies and advances in the research areas of priority in the department have been identified both in India and Abroad. It is also proposed to conduct and depute faculty to interact with industry to secure research projects on applied areas of Research. Special training to commercialize the research projects are also being planned for quick dissemination of research results to the society.

BAR CHART OF THE KEY ACTIVITIES PROPOSED FOR THE ACTION PLAN

S. No.	Key Activities: FSD	Project Months															
		1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	43-45	46-48
1.	**Basic Pedagogy**																
2	**Advanced Pedagogy**																
3	**Subject/ Domain Specific Training**																
4	**Attending Workshops, Seminars and Conferences**																
5	**Research Competence**																
6	**Skill Development**																

2.8 Provide an action plan for training technical and other staff in functional areas.

With the up gradation of Infrastructure and Laboratories, Skill Up gradation of all technical Staff has been proposed. This has been identified as on of the weakness during the SWOT analysis. The requisite skills have been identified so that the trained staff can minimize the maintenance problems in the department as well as the college apart from making the UG and PG practical sessions effective.

Special training in accounting packages, Office tools and Office automation and governance tools has been proposed for all Office and Administrative staff. Training in personality Development is proposed for all supporting staff.

The 18 month plan for training Technical and Supporting staff is enclosed in **Annexure – V**

2.9 Describe the relevance and coherence of Institutional Development Proposal with State's/National (in case of CFIs) Industrial / Economic Development Plan.

The Institutional Development Proposal of the College aims at making it more relevant to serve identified state priorities. These include a vast increase in human resources capable of undertaking Quality Teaching and focused research and development for interfacing with the industry, international competitiveness, and the development of disadvantaged sectors of the population. The college has therefore decided to realign its program and focus its energies on the development of research and educational excellence in the key areas of unconventional and interdisciplinary areas.

The College has also identified a number of need based and innovative programs that have potential in making the college take a considerable share in realizing the priorities and objectives of the state. The important initiatives taken and activities proposed include those which comply with environment management framework such as Electric power Audits, Environmental Pollution Index testing at Industrial localities as a social responsibility, Campus Wide Solar Lighting and taking up Civil Works complying to the environmental standards.

2.10 Describe briefly the participation of departments/faculty in the proposal preparation and implementation.

The planning process started with gaining views of major stakeholders' groups through meetings and brain storming sessions and Questionnaires. Such sessions gave the opportunity to understand the expectations of the stakeholders. This represented the basis for setting up the Vision and the Mission statements. The Vision and the Mission statements were rigorously discussed by the Principal and the Heads of the various departments based on the initial SWOT analysis. Finally, the proposal for the mission statements and the Quality improvement has been formulated and the final draft was prepared with appropriate strategic planning. This was approved by the Governing Body of College, and based on which, the rest of the strategic plan for the next four years was set.

Within this context the Institute Development Plan meeting the objectives of TEQIP – II project has evolved. The Development Plan has been drafted in three Stages.

In the **first stage** the SWOT analysis of the Institute for each of the objectives is prepared. Heads of the Departments were involved in several discussions sessions in phases. The focus on improving the Quality of its Post Graduate and Research Programs while sustaining its quality of Undergraduate Programs has been arrived at. Specialized and need based and interdisciplinary PG programs in various areas of Specialization have been identified. The course structure, curriculum along with Staff and Laboratory Requirements of these Programs have been elicited by the concerned departments and placed before the Board of Studies (BoS) of the Department.

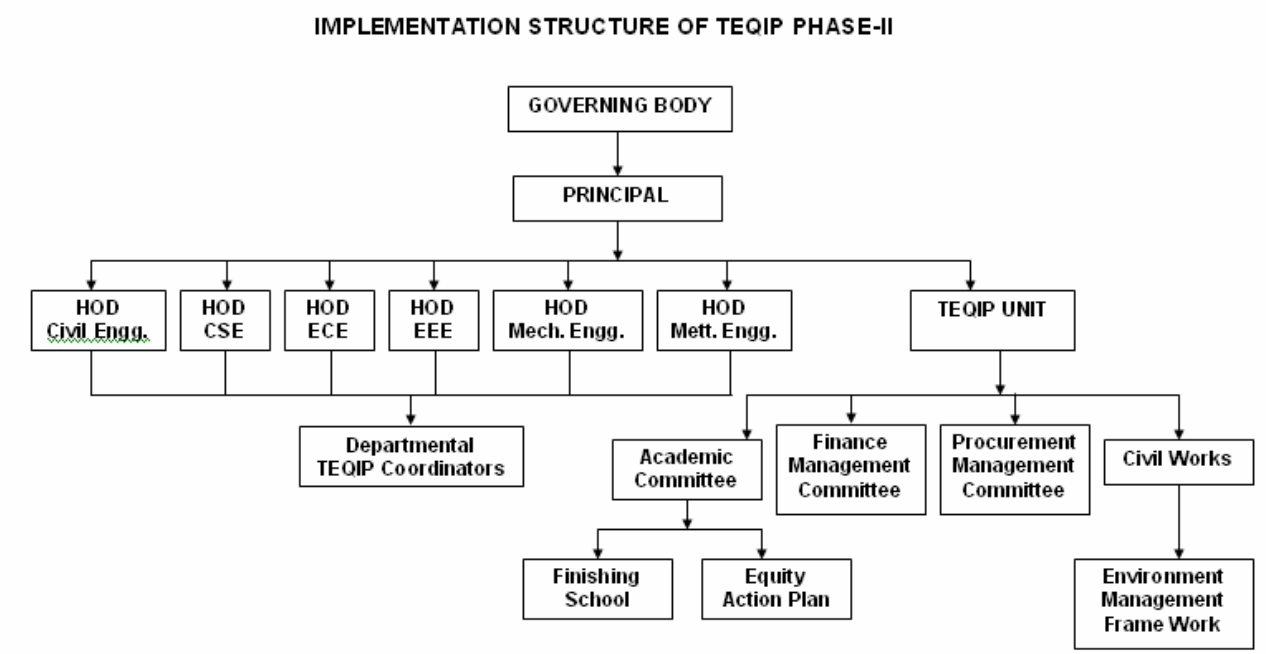
To improve the quality of education and provide the requisite hands-on, the **second stage** of the process involving discussions at the Department level, proposals were submitted for the procurement of Infrastructural Facilities for establishment of new Labs and Removal of Obsolescence and modernization of the existing Labs.

The **Third Stage** of the Planning Process involved the conduct of Training Need Analysis to elicit the training requirements of Teaching, Non-teaching, Contract Faculty and PG/Research Scholars of the institute. The requirements obtained by this process is categorized into Pedagogical, Institutional Management Capacity Building, Technical and Skill Development Categories.
The proposal is consistent with the core principles of the TEQIP–II Project, State objectives and is built on the strengths and opportunities of the College analyzing its weakness and threats. The proposal is a collective and comprehensive effort of all the staff members of the college towards realizing the vision of the College.

The Analysis done at all the stages is consolidated by the Principal and the Nodal Officer / Assistant Nodal Officer TEQIP and after prioritization and moderation arrived at a Budget Proposal of **Rs. 14.90 Crores.**

The Heads of the Departments and the department TEQIP Coordinators acted as an interface to appraise and communicate the consolidation and the prioritization of the proposals received from the members of their faculties.

2.11 Describe the institutional project implementation arrangements.



The college has developed a hierarchy of implementation arrangements based on the guidelines envisaged in the Project Implementation Plan. The college has placed the Institutional Development Proposal before the Governing Body to critically examine and approve the proposal. The college has constituted a Institutional TEQIP unit that works under the Principal. In addition, committees are constituted for proper implementation and monitoring of the project. The detailed description of each implementation unit is presented below.

A. Governing Body:

The College acquired autonomous status afresh from University as per UGC XI Plan Guidelines. The new Governing Body of the College constituted is Chaired by Prof. B. L. Deekshatulu an eminent academician. The composition of the Governing Body is enclosed. The approval of the Governing Body is taken in all policy decisions for smooth, cost effective and timely implementation of the TEQIP funds. Activities like forming various committees required for the project, Implementation of institutional reforms and proper utilization of funds along with timely submission of financial management reports are ensured by the Governing Body.

B. Constitution of Institutional TEQIP Unit:

The College has constituted TEQIP unit with Dr. G. Vijaya Kumari, Professor of CSE Department as Nodal Officer and Ms. P. Bhramara, Associate Professor of Mechanical Department as Assistant Nodal Officer who report to the Principal of the College. For proper coordination with the individual departments in obtaining the departmental proposal and liasion and ensure smooth implementation of the project, Departmental TEQIP Coordinators are appointed. The list of Departmental TEQIP Coordinators is mentioned as under.

Civil Department	: Dr. V. Padmavathi, Associate Professor
CSE Department	: Ms. Lakshmi Manikyamba, Assistant Professor
ECE Department	: Dr. D. Sreenivasa Rao, Professor
EEE Department	: Dr. A. Jaya Lakshmi, Associate Professor
Mechanical Department	: Dr. A.V.S.S.K.S. Gupta, Associate Professor
Metallurgy Department	: Ms. R. Rama Devi, Associate Professor

The departmental coordinators further help in the preparation of procurement plans for the goods and other services.

C. Constitution of Committees:

In addition the following committees are constituted by the Governing Body to oversee planning, implementation and monitoring activities.

i) Procurement Committee:

The Procurement of Goods by the project institutions will be in four categories: equipment, furniture, books & learning resources, minor items and minor civil works. These activities will be planned and monitored by the Procurement Committee along with hiring consultancy services. The committee will be headed by the Principal of the college with TEQIP nodal officers and Heads of the Department as the members. The Procurement process will be coordinated by Dr. L. Pratap Reddy, Professor of ECE.

ii) Financial Committee:

The activities of the committee include preparation of annual budget of the college, ensure the fund flow for procurement of goods, services and other activities envisaged in TEQIP II, maintaining the accounts and disclosing the audited reports quarterly as per the TEQIP guidelines. The committee will be headed by the Principal of the college with TEQIP nodal officers and Heads of the Department and other accounting staff as the members. The Financial committee will be coordinated by Dr. A.V. Sitarama Raju, Professor of Mechanical Engineering.

iii) Academic Committee:

The academic committee will ensure the implementation of academic activities like pedagogical training and domain specific training of the teaching, non-teaching, technical and supporting staff. In

addition, with the help of departmental coordinators, the committee will ensure the implementation of equity plan by remedial teaching of academically weak students, training of soft skills and training of faculty who are unable to perform effectively. The committee will be headed by the Principal of the college with TEQIP nodal officers and Heads of the Department as the members. The activities of the committee will be coordinated by Dr. M.V. Seshagiri Rao, Professor of Civil Engineering.

iv) Civil Works and Environmental Management Committee:

The activities include the minor civil works for the newly proposed laboratories and class rooms and activities like adaptation of environmental friendly activities like solar lighting, solar heating for hostels and houses within the campus etc., The committee will be headed by the Principal with TEQIP nodal officers and the members of the engineering cell of the college. The activities will be coordinated by Mr. Siva Konda Reddy, Asst. Professor, Civil Engineering.

2.12 Provide an institutional project budget in Table No.34.

Based on the departmental proposals, the budget of the college for the scaling up of PG education and for enhancement of demand driven R, D and I is Rs. 14.90 Crores. The detailed budget is presented as follows.

Table-34: Institutional Project Budget for Sub-Component 1.2

S.No	Key Activities	Project Life Allocation	2010-11	2011-12	2012-13	2013-14	2014-15
1	**Infrastructure improvements for teaching, training and learning through:**	**6.60**	**0.06**	**5.36**	**0.93**	**0.19**	**0.06**
i	Establishment of new laboratories for new and existing PG programmes and Research	5.25	---	4.79	0.43	0.03	
ii	Updation of learning resources	0.15	0.03	0.03	0.03	0.03	0.03
iii	Procurement of furniture	0.30	---	0.20	0.10	---	---
iv	Modernization and strengthening of libraries and increasing access to knowledge resources	0.15	0.03	0.03	0.03	0.03	0.03
v	Refurbishment (Minor Civil Works)	0.45	---	0.25	0.20	---	---
vi	Consultancy Services	0.30	---	0.06	0.14	0.10	
2	**Providing Teaching and Research Assistantships for significantly increasing enrolment in existing and new Masters and Doctoral programmes in Engineering disciplines**	**3.0015**	**0.0945**	**0.683**	**0.8965**	**0.9825**	**0.345**
i	PG Teaching Assistantships for 50 PG students @ Rs. 8000 /-	1.56	---	0.28	0.48	0.48	0.32
ii	Research Assistantships for 30 Ph.D scholars	0.756	0.0945	0.378	0.3915	0.345	---
iii	Foreign Fellowships for 5 Ph.D scholars upto 3 months	0.1325	---	---	---	0.1325	---

iv	Research Grant / Contingency	0.10	---	0.025	0.025	0.025	0.025
3	**Enhancement of R&D and Institutional Consultancy Activities**	**0.75**	**0.023**	**0.20**	**0.22**	**0.21**	**0.097**
i	For Securing Projects and Fee for Publication and Commercialization of Research Projects and Patents	0.15	0.02	0.04	0.04	0.03	0.02
ii	Consultant Fee, Travel and Hospitality and Honorarium for Expert Lectures	0.20	0.003	0.05	0.05	0.05	0.047
iii a	UG Research: For industry projects – Travel (3-4 weeks) during vacation	0.125	---	0.03	0.04	0.04	0.015
iii b	Student Incentives for taking up industry/interdisciplinary projects	0.125	---	0.03	0.04	0.04	0.015
iv	Industrial visits of Faculty for collaborations and Project Implementation	0.15	---	0.05	0.05	0.05	---
4	**Faculty and Staff development for improved competence based on TNA**	**1.545**	**0.05**	**0.375**	**0.525**	**0.375**	**0.22**
i	Faculty and Staff Training within India	0.45	0.05	0.10	0.10	0.10	0.10
ii	Faculty and Staff Training abroad	0.795	---	0.20	0.35	0.20	0.045
iii	Consumables and In house thesis writing expenditure	0.30	---	0.075	0.075	0.075	0.075
5	**Enhanced interaction with Industry**	**0.75**	**0.01**	**0.185**	**0.185**	**0.185**	**0.185**
i	BoS Meetings	0.10	---	0.025	0.025	0.025	0.025
ii	Student Projects and Expert Lectures	0.20	---	0.05	0.05	0.05	0.05
iii	PSAG Expenditure	0.10	---	0.025	0.025	0.025	0.025
iv	Campus Placements and Hospitality	0.10	---	0.025	0.025	0.025	0.025
v	Training for Campus Placements – Bridge Coaching	0.25	0.01	0.06	0.06	0.06	0.06
6	**Institutional Management Capacity enhancement**	**0.30**	**---**	**0.165**	**0.055**	**0.055**	**0.025**
i	Study Tours within and Outside India (upto 7 Days)	0.15	---	0.15	---	---	---
ii	Training of BoG members	0.05	---	0.02	0.03	---	---
iii	Management Capacity Building	0.10	---	0.025	0.025	0.025	0.025
7	**Implementation of institutional reforms**	**0.152**	**0.008**	**0.013**	**0.013**	**0.113**	**0.005**
i	Governing Body Meetings and CAC Meetings	0.04	0.005	0.01	0.01	0.01	0.005
ii	Sundry Expenditure (Faculty and Web Portals)	0.012	0.003	0.003	0.003	0.003	---
iii	NBA Accreditation Fee		---	---	---	0.10	---

8	**Academic support for weak students**	**0.30**	**0.02**	**0.07**	**0.07**	**0.07**	**0.07**
i	Training of Soft skills	0.15	0.01	0.035	0.035	0.035	0.035
ii	Remedial Teaching	0.15	0.01	0.035	0.035	0.035	0.035
9	**Incremental Operating Cost**	**1.50**	**0.11**	**0.345**	**0.345**	**0.35**	**0.35**
i	TEQIP O & M	0.20	0.01	0.045	0.045	0.05	0.05
ii	Attending Conferences, Seminars and Workshops	1.30	0.10	0.30	0.30	0.30	0.30
	TOTAL	**14.8985**	**0.3755**	**7.396**	**3.2395**	**2.5305**	**1.357**

2.13 (a) Provide the targets against the deliverables given in Table 35.

Table 35: Project Targets for Institutions under Subcomponent 1.2

Sno	Deliverables	Baseline	**Targets to be achieved**	
			At the end of 2 years	**By project closing**
1.	Numbers of students registered for a)Masters in Engineering programme b)Doctoral programme in engineering	 292+45 (I) 120 (6 Fulltime)	 443 156 (30 Fulltime)	 **500** **168** **(40 Full time)**
2.	Revenue from externally funded R&D projects and consultancies in total revenue(Rs.in lakhs)	40.00	56.00	**70.00**
3.	Number of publications in refereed journals • National journals • International journals b)Citations c)Patents obtained/filed d)Books e)No of R&D projects commercialized	 277 87 50 02/01 14 Nil	 30 15 02 04 ---	 **90** **45** **04** **06** **02**
4.	Number of co-authored publication in refereed journals a)National b)Internationals	 12 10	 15 10	 **40** **25**
5.	Student credentials a)Campus placement rate of • UG students • PG students b)average salary of placement package for (Rs. in.lakhs) • UG students • PG students	 92% 20% 3.5 3.5	 94% 45% 4.00 4.50	 **97%** **72%** **4.50** **5.50**
6.	Number of collaborative Programmes with industry	02	06	**10**
7.	Accreditation status	66% UG (34% UG applied for)	100% eligible UG & 60% PG Programmes	**100% eligible UG & PG Programmes**

		40% PG Applied for	applied for	**applied for**
8.	Vacancy position for faculty and staff	10%	< 8%	**< 5%**
9.	Number of regular faculty having a Master degree or a doctorate degree in engineering disciplines	62% Ph.D	80% Ph.D	**90% Ph.D**
10.	Transit rate from 1st to 2nd year for the following: • All students • SC • ST Students • OBC Students • Women Students	90.3% 76.3% 68.7% 89.6% 91%	92%	**94%**
11.	Autonomy Status	Applied For	Obtained	**Obtained**
12.	Enrollment of Faculty with only Bachelor degree for qualification upgradation	< 1% of the faculty with Bachelor Degree	0 %	**0 %**
13.	**Any other academic deliverables (maximum 3)**			
(i)	Organizing Conferences	03	02	**04**
(ii)	Organizing Workshops	12	12	**24**

(b) Describe the plan in detail for achievement of above targets enumerated in Table 35.

The targets mentioned in the table are proposed to be achieved by the following key activities during the project period.

- **Scaling of PG and Ph. D enrollment:**

  Two new PG programs are proposed during the period by revamping the existing courses based on demand and relevance. This is expected to increase the PG enrollment by about 50%. The Full time Ph.D fellowships are proposed to be increased by 30 numbers apart from parttime Ph.D registrations which is expected to increase the Ph. D enrollment by 40 % by the end of the project.

- **Enhancement of R& D and Institutional Consultancy:**

  With a strategic goal to enhance the research competencies in the identified thrust areas and increase in Ph.D enrollment, the college proposes to enhance its collaborations with R& D Institutes, research funding and increase the publications in refereed national and International Journals. It is expected to increase the research funding by about 75% by the end of the project and consultancy by about 200% and significantly increase the publications and other research outcome.

- **Enhanced Interaction with Industry:**

  The College has devised specific action plan to increase the Industry Institute Interaction for collaborative programs and research funding. This is expected to increase the number of industry oriented PG programs, joint research programs, joint

publications and commercialization of R&D activity, patents and establishment of Innovation Centre.

- **Academic Support for Weak Students and Finishing School:**

  The College will on regular basis conduct Finishing School by identifying the Skill gap both domain and Softskills. The academically weak students are identified by their performance in the semester examinations and pre-assessment test to identify the needs of the students and design course content of the Finishing Schools and Remedial Classes. This is expected to increase the placement ratio and average salary increase of the students of both UG and P. G. The Remedial Coaching is expected to significantly improve the Transit rate of the students by over 98% a successful equity plan.

- **Implementation of Institutional Reforms:**

  The Governing Body of the college is keen on implementing institutional reforms for enhancing the quality of the programs offered and accreditation of the courses. This is proposed to give autonomy of reasonable levels to the institute with suitable delegation of powers. The programs would gain recognition through accreditation. The vacancy position of the sanctioned strength is targeted to be decreased and faculty qualification upgradation.

2.14 Give an action plan to ensure that the project activities would be sustained after the end of the Project.

The total cost of implementing the set of activities proposed over a period of 4 years amounts to Rs. 14.9 crores, of which about 3% is allocated to construction, 35% to equipment and 20% to fellowships. The Action Plan for sustenance of the activities is as follows:

- The College has established four funds namely **Corpus fund, Staff development fund, Equipment replacement fund and Maintenance fund.**
- The Internal Revenue Generation (IRG) of the College which amounts to Rs. 724 Lakhs is distributed to four funds in the ratio of 10% for Corpus fund, 20% for Staff Development fund, 20% for Equipment replacement fund, 10% for Maintenance fund, 20% for University Development fund and 20% for College Development fund.
- The present IRG of the College is expected to be stepped up by 200% by the end of four year period.
- Tailor made Industry supported PG Courses and Executive Development Programs which are short term with flexible timing would be explored.
- Certification Programs typically in power sector, Civil, Mechanical and Communication Technologies etc. to generate revenue.
- The recurring cost load on the institution has been carefully designed to be sustainable, as follows: staff salaries for the new courses will be covered by the fees; with increased research capacity, Ph.D. fellowships and other research costs included in the project will be covered by research grants from government and industry;
- Other staff specifically hired only for project period for implementation and monitoring the project.
- It is projected that the college will increase the share of its budget generated through fees, consultancies and interest on funds to sustain the activities after the project period.

2.15 Provide Procurement Plan for the first 18 months for Goods and Civil Works in Table 36 and Consultant Services in Table 37 with budget and timeframe.

The Procurement Plan for Goods is given in **Annexure – VI**

2.16 Provide any other information related to special academic achievements of the institution.

- More than 62 % of the faculty members are Ph.D holders.
- Faculty are actively involved in Teaching and Research and publish on an average 80 technical papers in refereed Journals and Conference proceedings annually.
- Average Experience of the faculty is 15 years.
- Conducted National/ International Conferences in various Departments-
    - ICISS 2008 by Computer Science & Engineering Department, proceedings of the conference published in Springer Verlag.
    - NCSAME 2009 by Mechanical Engg Department
- Conducted three weeks refresher courses/four week orientation courses regularly with UGC-ASC, JNTU.
- Regular presentation of technical papers seminars/Workshops/ Journals/Conferences both at National and International levels.
- Regularly conducted the BoS meetings for revision of courses for both UG & PG programs.
- Received Research grant from AICTE, UGC and other funding organizations.
- Campus wide Leased Line Internet connectivity is provided to all the departments including Hostels and Quarters.
- Full Time Research fellowships provided in all the Engineering disciplines.
- 6 month leave with full pay is provided to faculty for qualification upgradation.
- 24x7 Centralized Computer Centre is provided with specialized packages for benefit of UG, PG, Ph.D. Scholars.

2.17 Provide an action plan for organizing a Finishing School and for improving the academic performance of SC/ST/OBC/academically weak students through innovative methods, such as remedial and skill development classes for increasing the transition rate and pass rate with the objective of improving their employability.

- **Finishing School**

The College organizes Finishing School with an aim to provide the necessary employability skills to the students through its Training and Placement Cell.

Objectives

- To bridge any gap between the subjects studied and the industry needs and provide industry ready graduates.
- To supplement the technical Skills with the necessary Soft Skills to succeed in securing employment and improve personality and code of ethics.
- To increase the employability percentage of the students.

Action Plan for Finishing School:

1. Conduct pre-assessment test to analyse, technical Competency, behavioral Skills, Analytical Skills and capability to adjust to working environment.
2. Offer Specialized Programmes with the experts from Industry of the relevant area to match their needs on part-time basis or during vacation.
3. Increase the Learning Resources in the Training and Placement Cell.
4. Visit Industries and conduct study tours.
5. Organize Campus Placement in the areas where the Skills developed can be utilized thereby enhancing the percentage of campus placement.

Equity Action Plan

Objectives

- To supplement the regular classroom teaching with small group and practicum oriented sessions to enhance learning of those students who Cannot follow the course at the normal pace and mode of teaching.

- To provide access and equal opportunities to all sections of the community implementing equity plan.

Action Plan for Equity.

1. Conduct Remedial Coaching to all academically weak students

2. Soft Skills Training specially focused to students from rural areas.

3. Identify the students requiring academic support by the result analysis of the first year itself to induct them into the main stream. Presently the transition rate of SC/ ST/ OBC and other academically weak students is 78%. It is proposed to increase this to 92% by the end of the project.

BAR CHART OF THE KEY ACTIVITIES PROPOSED FOR THE ACTION PLAN
2.17. KEY ACTIVITY: Equity Action Plan

S. No.	Key Activities	Project Months															
		1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	43-45	46-48
1	**Identification of weak students**																
2	**Remedial Coaching**																
3	**Pre assessment test**																
4	**Identification of Faculty Needs**																
5	**Finishing School**																

Disclosure Management Framework

The activities of the institute adhere to the standards of the Disclosure Management Framework by the following action Plan

1. By regularly updating the college Website.
2. Providing a link in the college website to the TEQIP – II nodal centre.
3. Providing the Guidelines approved by the Governing Body on the website.
4. Providing options for uploading applications for consultants on the website.
5. Disclosing all TEQIP activities and progress on the website.