# TECHNICAL EDUCATION QUALITY IMPROVEMENT PROGRAMME (TEQIP)

## PHASE II SUB COMPONENT 1.1

# REVISED INSTITUTIONAL DEVELOPMENT PROPOSAL
# 2016



# TKM COLLEGE OF ENGINEERING, KOLLAM - 5

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# INSTITUTIONAL BASIC INFORMATION

**1.1     Institutional Identity          TKM COLLEGE OF ENGINEERING, KOLLAM -5**

- Is the Institution AICTE approved? :   **Yes**
- Furnish AICTE approval No.          :   **South-West/1-2011196681/2014/EOA Date: 04-Jun-2014**
- Type of Institution          :    **Government    aided**
- Status of Institution        :    **Non autonomous college (Affiliated to the University of   Kerala)**

- Name of Head of the Institution  :   **Dr. Amarunnishad  T.M**

**Principal**

**1.2  Engineering UG and PG programmes offered in Academic year 2014-15:**

| S. No | Title of programmes | Level (UG, PG, PhD) | Duration (Years) | Year of starting | AICTE sanctioned intake 2014-2015 |
|---|---|---|---|---|---|
| 1 | Civil Engineering | UG | 4 Years (8 Semester) | 1958 | 120 |
| 2 | Mechanical Engineering | UG | 4 Years (8 Semester) | 1958 | 120 |
| 3 | Electrical  and Electronics Engineering | UG | 4 Years (8 Semester) | 1958 | 120 |
| 4 | Electronics & Communication Engineering | UG | 4 Years (8 Semester) | 1977 | 120 |
| 5 | Chemical Engineering | UG | 4 Years (8 Semester) | 1980 | 60 |
| 6 | Production Engineering | UG | 4 Years (8 Semester) | 1980 | 60 |
| 7 | Computer Science and Engineering | UG | 4 Years (8 Semester) | 1984 | 60 |
| 8 | M.Tech Structural Engineering & Construction. Management. | PG | 2 Years (4 Semester) | 1989 | 18 |
| 9 | M.Tech Industrial Refrigeration & Cryogenics | PG | 2 Years (4 Semester) | 1984 | 18 |
| 10 | M.Tech Communication Systems | PG | 2 Years (4 Semester) | 2012 | 18 |
| 11 | M.Tech Computer Science and Engineering | PG | 2 Years (4 Semester) | 2012 | 18 |
| 12 | Architecture | UG | 5 Years (10  Semester) | 1985 | 80 |

| 13 | MCA | PG | 3 Years (6 Semester) | 1986 | 60 |
| 14 | *M.Tech Computer Integrated | PG | 2 Years (4 Semester) | 2001 | 18 |
| 15 | *M.Tech Industrial Instrumentation & Control | PG | 2 Years (4 Semester) | 2003 | 24 |

* Unaided course with separate staff and infrastructure with Government approval and not included in the IDP

- **Accreditation Status of UG( B.Tech) programmes:**

| Title of UG programmes being offered | Accreditation status |
|---|---|
| Civil Engineering | Applied |
| Mechanical Engineering | Applied |
| Electrical and Electronics Engineering | Applied |
| Electronics &Communication Engineering | Applied |
| Chemical Engineering | To be applied |
| Production  Engineering | To be applied |
| Computer Science and Engineering | Applied |

- **Accreditation Status of PG (M.Tech) Programmes:**

| Title of PG programmes being offered | Accreditation status |
|---|---|
| M.Tech. Structural Engineering & Construction Management | To be applied |
| M.Tech Industrial Refrigeration & Cryogenics | To be applied |
| M.Tech Computer Science and Engineering | Not eligible |

| M.Tech Communication Systems | Not eligible |
|------------------------------|--------------|

## 1.3 Status of Faculty Associated with Teaching Engineering Students

| Principal | Professor | Associate Professor | Assistant Professor | Total |
|-----------|-----------|---------------------|---------------------|-------|
| 1 | 14 | 33 | 112 | 160 |

# 2. ELIGIBILITY CRITERIA

Benchmarks for Institutions to qualify for Sub-component 1.1

## 2.1 Eligibility Criteria:

| S.No. | Eligibility Parameters | Benchmark values | Institution's response |
|---|---|---|---|
| 1 | Agreement to implement all academic and non-academic reforms listed below:<br>• Curricular Reforms<br>• Exercise of autonomies<br>• Establishment of Corpus Fund, Faculty Development Fund, Equipment Replacement Fund and Maintenance Fund<br>• Generation, retention and utilization of revenue generated through a variety of activities<br>• Filling up all existing teaching and staff vacancies<br>• Delegation of decision making powers to senior Institutional functionaries with accountability<br>• Improved student performance evaluation<br>• Performance appraisal of faculty by students<br>• Faculty incentives for Continuing Education (CE), consultancy and R&D<br>• Accreditation of eligible UG and PG programmes<br>*(The institution will fulfill the requirements in the desired timeframe)* | Yes | Yes<br>Yes<br><br>Yes<br><br>Yes<br>Yes<br><br>Yes<br>Yes<br>Yes<br><br>Yes<br><br>Yes |
| 2 | Age of the Institution from the start of its first academic session (in years):<br>a) Regular States (Kerala)<br>b) New States lagging in Technical Education and Special Category | <br><br>6<br>4 | <br><br>57 Years<br>NA |
| 3 | Total number of UG and PG programmes currently conducted | 4 | 7 UG and 4 PG *(aided)* |
| 4 | Faculty positions filled on full--time basis as percentage of the total faculty positions sanctioned in accordance with the AICTE prescribed student-to-faculty ratio for:<br>a) Govt. funded and Govt. aided institutions<br><br>b) Private unaided institutions | Yes | 100%<br><br>NA |
| 5 | Presence of Board of Governors with an eminent educationist or Industrialist as the Chairperson | Yes | Yes |

**3. Baseline Data (*all data given for the following parameters must be restricted to engineering disciplines/fields only*):**

| S. No | Parameters | 2013-14 | 2014-15 |
|---|---|---|---|
| 1 | Total strength of students in all programmes and all years of study | 2576 | 2699 |
| 2 | Total women students in all programmes and all years of study | 776 | 785 |
| 3 | Total SC students in all programmes and all years of study | 172 | 178 |
| 4 | Total ST students in all programmes and all years of study | 21 | 25 |
| 5 | Total OBC students in all programmes and all years of study | 1389 | 1354 |
| 6 | Number of fully functional P-4 and above level computers available for students | 420 | 465 |
| 7 | Total number of text books and reference books available in library for UG and PG students | 68256 | 79564 |
| 8 | % of UG students placed through campus interviews | 58 | 60 |
| 9 | % of PG students placed through campus interviews | 30 | 35 |
| 10 | % of high quality undergraduates (>75% marks) passed out | 25 | 28 |
| 11 | % of high quality postgraduates (>75% marks) passed out | 48 | 52 |
| 12 | Number of research publications in Indian refereed journals | 12 | 18 |
| 13 | Number of research publications in International refereed journals | 23 | 32 |
| 14 | Number of patents obtained | 0 | 2 |
| 15 | Number of patents filed | 0 | 1 |
| 16 | Number of sponsored research projects completed | - | 1 |
| 17 | The transition rate of students in percentage from 1st year to 2nd year for : <br> (i) All students <br> (ii) SC <br> (iii) ST <br> (iv) OBC | 75 <br> 55 <br> 15 <br> 78 | 78 <br> 62 <br> 57 <br> 80 |

## 4 . R E V I S E D INSTITUTIONAL DEVELOPMENT PROPOSAL (IDP)

### 4.1    Introduction

The Thangal Kunju Musaliar College of Engineering is the first grant-in-aid Private Engineering college established by the Thangal Kunju Musaliar College Trust in the year 1956. The foundation Stone of the college was laid in 1956 by Dr. Rajendra Prasad, The first president of Independent India and was formally inaugurated by Prof. Humayun Kabir, The Hon'able Minister for Scientific and Cultural Affairs, Government of India on 3$^{rd}$ July 1958. The TKM College of Engineering is built in a perfect saracenic architectural Patten, and is a unique landmark. The College is a major institution of technical education in the country. National Commissioner for Minority Educational Institution has declared the college as a minority educational institution under Article 30 of the constitution of India, on 30$^{th}$ July 2010.

The college has submitted Institutional Development Proposal(IDP) for TEQIP II Sub component 1.1 during September 2012 and the institution was selected for the implementation of the project. Consequently the MoU has signed and the first installment of the financial assistance has received in April 2013. Implementation of the TEQIP II has brought radical changes in the existing teaching-learning atmosphere and for improving the quality and employability of students. The project has opened avenues for the active involvement of students in the learning process. Remedial classes have improved the technical as well as managerial competence of students. The enhancements are brought out by updated learning resources and their increased access, improved laboratory facilities, modern digital class rooms, improved hostel facilities with homely atmosphere and extensive faculty and staff training. The laboratories in the institution have been modernized using state of the art equipments.

### 4.2  Targets of the institution achieved during the project within 2 years and targets to be achieved at the end of the project

| Sl. no | Deliverables | Targets Planned in first IDP(within 2 years) | Targets achieved (within 2 years-March 2015) | Targets to be achieved at the end of the project (2016 October ) |
|---|---|---|---|---|
| 1 | Number of students registered for<br>a)   Masters in Engineering program<br>b)   Doctoral program in Engineering | 72<br>14 | 72<br>16 | 88<br>20 |
| 2 | Revenue from externally funded R&D Projects and consultancy | 60 Lakhs | 65.60 Lakhs | 100 Lakhs |
| 3 | Number of publications in refereed journals<br>a)   National<br>b)   International | 32<br>20 | 28<br>52 | 40<br>80 |

| 4 | IRG as % of total annual recurring expenditure | 11 | 9 | 12 |
|---|---|---|---|---|
| 5 | Number of co-authored publications in refereed journals<br>a) National<br>b) International | 32<br>20 | 26<br>18 | 40<br>30 |
| 6 | Student credentials<br>a) campus placement rate of<br>• UG students<br>• PG students<br>b) average salary of placement package for (Rs……………in lakh)<br>• UG students<br>• PG students | 256<br>12<br><br><br>3.1 Lakhs<br>3.2 Lakhs | 290(55%)<br>14<br><br><br>3.3 Lakhs<br>3.5 Lakhs | 360(70%)<br>24<br><br><br>3.7 Lakhs<br>4.0 Lakhs |
| 7 | Number of collaborative programs with Industry | 4 | 6 | 8 |
| 8 | Accreditation status (obtained plus applied for) | Applied for | Applied for 6- UG programs | obtain accreditation for all UG and PG programs |
| 9 | Faculty position filled (All courses) | 189 | 174 | 190 |
| 10 | Percentage of regular faculty having a Masters Degree or a Doctorate Degree in Engineering disciplines | 98 (Masters)<br>35(PhD) | 100 (Masters)<br>36(PhD) | 100 (Masters)<br>41(PhD) |
| 11 | Transition rate from $1^{st}$ to $2^{nd}$ year for the following:<br>• All Students<br>• SC and ST Students<br>• OBC Students<br>• Women Students | 76<br>40<br>77<br>92 | 78<br>50<br>80<br>93 | 93<br>70<br>85<br>96 |
| 12 | Autonomy status | | Applied to UGC | To obtain from UGC |
| 13 | Enrolment of faculty with only Bachelor Degree for qualification | Nil | Nil | Nil |
| 14 | (i) Top Ranking in University results<br>(ii) Innovative student projects<br>(iii) Publications by students | 7<br>3<br>10 | 12<br>8<br>15 | 15<br>10<br>30 |

### 4.3  Major Accomplishments of the project implementation in the college.

*Improvement  in teaching , training and learning*
- All  Laboratories modernized.
- All the classrooms were converted into smart class rooms.
- Central Computing facility established.
- Responsive website
    Eazy campus
    Digital library
    web OPAC(Online Public Access Catalogue)
- A language lab with state of the art facility has been setup.
- Provided Wi-Fi facility throughout the campus including hostels.
- More than 7000 books added to the library collection in various engineering branches.
- Electronic resources (e-journals, e-books, etc) subscribed.
- TKMCE publishing center established.
- Introduction of new PG programs in computer science and communication systems.
- Obtained approval from AICTE and University of Kerala  for starting  PG Programmes in Mechanical Engg (Nanotechnology) and Electrical Engg (Power systems)

*Faculty and Staff  Development*
- In house training programs conducted by all Departments
- Conducted  43 FDP and 17 SDP
- Participation of about 65% Faculty in external training programs in reputed Institutions.
- Participation of  about 80%  technical staff in Skill development programs  conducted outside the Institution
- 13 faculty presented papers in International conferences organized abroad
- Upgradation of faculty qualifications – PhD (Total 15, 4 with TEQIP Support)

*Research and Development*
- Organized International  conferences by  every Engineering Departments
- The college is a Quality Improvement Program (QIP) Center for PhD Programme
- 70 % Improvement in the faculty and student  publications.
- SEED money was provided to 12  faculty  for doing  Innovative Research Projects.
- Collaborative Research  with
    - Institute of Technical Physics, Karlsruhe Institute of Technology, Germany
    - Faculty of Science and Technology, University of Twente, Netherlands
    - IISc, Bangalore, IIT Madras
    - Indian  Space Research Organisation(ISRO)
    - Institute of Plasma Research, Department of Atomic Energy, Govt. of India
- Internship to  MTech Students  in foreign reputed Universities
    - Two students got the opportunity to do  internship (with   scholarship) at
       Institute of Technical Physics, Karlsruhe Institute of Technology, Germany
       Faculty of Science and Technology, University of Twente, Netherlands
- Consultancy project/service
    - 4 consultancy projects
    - The faculty members render assistance to R&D organizations (ISRO etc..)
         and industries through technical advice and consultancy services..

### *Industry Institute Interaction*
- Entrepreneurship Development Cell established with support from AICTE
- 9 MoUs signed with industries
- 20 MoUs are at the discussion level
- Increase in number of membership in professional bodies
- 2 patents obtained, 1 filed
- Electrical Equipment Testing Center has been established as a community initiative.
- 5 Technology Business Incubator

## *Equity Action Plan*
- Increase in the transition rate of weak students.
- Improvement in placements.
- QEEE centre established in the college

## 4.4 Vision and Mission

As an initiative to the accreditation and autonomy, vision and mission of the College have been redefined.

### Vision

Excellence in education and research with socio-economic and environmental outlook

### Mission

- To offer the state of the art Undergraduate, Postgraduate and Doctoral programmes
- To enhance knowledge by engaging in cutting edge research and by undertaking collaborative projects with industry
- To instill ethical, social and environmental perspectives in designing systems for sustainable development
- To nurture creativity, self learning and interpersonal skills

## 4.5 ACTIVITIES FOR THE REMANING PROJECT PERIOD.

The action plan proposed here will help in improving all-round excellence of student and to assist then in formulating their careers. It will also ensure that all students and faculty have equal opportunity to avail the benefits of the project with substantial improvement in the performance of academically weak students. In order to strengthen the institution for improving the learning outcomes and employability of graduates, the institution has put forward this proposal for TEQIP- Phase II (Cycle-2) and the objectives identified are as follows.

- Employability survey will be conducted on periodical basis among first year students to identify the weak students. Improving the performance of academically weak students by evaluating the genuine reason and arranging remedial measures which includes extra classes, professional counseling, etc. Special academic plan will be prepared and implemented for students from other parts of the country and abroad.

- Employability of graduated will be increased by training programs in communication skill and core employability factors. Participation of students in ISTE, CSI, IEEE Students chapters. College union and National Service Scheme will be promoted.

- A series of programs have been proposed for increasing the learning outcomes of the students. These are required for increase in transition rate, pass percentage, performance appraisal and satisfaction index of the students.

- Steps have already been started to get all the UG and PG programs accredited by 2015 - 2016.

- Various measures are proposed to strengthen existing PG programs and start new PG programs especially in Power Systems, Nano Technology , Transportation Engineering , Industrial safety and Engineering and Urban planning.

- Strengthening Industry Institute Interaction Cell (IIIC) for real world exposure to the students Developing the infrastructure of the institute by procuring modern laboratory equipments and setting up PG laboratories.

Academic and Non Academic Reforms are also proposed in the IDP for creating better teaching-learning atmosphere in the institution. The reforms will also ensure that project activities would be sustained after the end of the project period.

In order to achieve the general and specific objectives the institution has identified key activities and an action plan upto October 2016 has been chalked out with a budget estimate of Rs. **391.37**. Lakhs. The fund requirement over the project period is given below.

## 4.6 INSTITUTIONAL BUDGET FOR REMAINING PROJECT PERIOD

### Fund Required for the remaining Project Period

| Sl. No. | Activity | Budget for 2015-16  ( in Lakhs) | Budget for 2016-17  ( in Lakhs) |
|---|---|---|---|
| 1 | Improvement in teaching learning activities (Procurement of equipments and minor civil works) | 188.77 | 0 |
| 2 | Teaching and research assistantship | 10 | 6 |
| 3 | Enhancement of R & D | 1 | 1 |
| 4 | Faculty and Staff Development Programs | 19 | 10 |
| 5 | Enhanced interaction with industry | 20 | 9 |
| 6 | Institutional management capacity enhancement | 15.5 | 6 |
| 7 | Institutional academic reforms | 15 | 0 |
| 8 | Academic support for weak students | 15 | 7.6 |
| 9 | Incremental operating cost | 45 | 22.5 |
|  | Grand total | **329.27** | **62.1** |

### 4. 7   Action Plan up to October   2016

### (a) Improving Employability of Graduates

A Career Guidance and Placement Cell are functioning in the College. The center aims at equipping the students to develop qualities that are essential for them to become the best decision   makers   and globally  competent  professionals. Normally,  TKM  College  of Engineering used to achieve placement up to 58 – 60 % of the annual intake. In the first year itself,  the  employability survey  will  be  conducted among  the  students  to  test  their proficiency in English, Mathematics and Physics. Special training on employability will be provided to weaker first year students.

As a result of the implementation of TEQIP II, the placement has been increased to 65% of the annual intake.

A set of need based programs are planned for further enhancing the employability of our students  in general  as  noted  below. The  students  from  other  parts  of  the  country and abroad are separately considered for these programs

In order to increase the employability of the students, the following programs were planned in the First IDP and part of those programs were completed.

- Training programs and workshops concentrating on communication skills, interview skills, group discussion, written examinations on logical reasoning, aptitude and debates to improve soft skills.
- Set up a language lab through which the students can be trained to improve language skills there by improve their confidence level in handling English language more effectively.
- Special training programs that include quantitative aptitude skills for the second and third year students which would be placement oriented with a follow up program arranged in house, in their consecutive years of study.
- Invited lecture series on career options targeting second and third year students from leading service providers and eminent people from corporate world to get a feel about the current scenario of job potential in the market and how to tap such opportunities.
- Arrange Training programs for final year students to help them prepare for competitive exams like Graduate Aptitude Test in Engineering (GATE), Graduate Management Admission Test (GMAT), Graduate Record Examination (GRE), Civil Services and exams of public sector undertakings such as ISRO, Defense Research Development Organization (DRDO), Centre for Development of Advanced Computing (CDAC), Bharat Heavy Electricals Ltd. (BHEL) etc.
- Arrange for Invited talks by eminent personalities from reputed Industries, Premier educational and  research  institutions,  Civil  Servants,  Non  Governmental  Organizations (NGOs) and Alumnus for the benefit of the student community in general.
- Providing training programs in the state of the art software used in industries with

the help of industry trained people in MATLAB, LabView, Statistical Package for Social Sciences (SPSS), Computer Aided Design (CAD) Software's for Civil, Mechanical and Electrical Engineering students, etc.

* Organize technical seminars/conferences under the banner of ISTE / IEEE / CSI / IETE
student's chapters. This will enable students to develop organizing skills, leadership skills, managerial skills and such other soft skills.

* Through National Service Scheme (NSS), organize community based programs which will enable the students to work with local community people to conduct programs of social relevance. College Counseling Cell is also planning to organize certain program to help and advice the newly joined students about engineering curriculum and how to organize their study, etc. Provide timely advice to the Departmental Associations to organize various curricular, co – curricular and extracurricular activities in a properly timed manner without suffering the academic work.

An activity chart of the same is presented below.

## Activity Chart Improving Employability of Graduates

| Sl.No | Activity | Project Months | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2015-16 | | | | 2016 | |
| | | April - Jun | July - Sept | Oct - Dec | Jan - March | April - Jun | July - Oct |
| 1 | Training programs and workshops to improve soft skills of students | | | | | | |
| 2 | Training at Language Lab | | | | | | |
| 3 | Placement oriented special training programs | | | | | | |
| 4 | Training programs for final year students | | | | | | |
| 5 | Invited talks by eminent personalities from reputed industries | | | | | | |
| 6 | Training programs in state of the art Software with help of industries | | | | | | |
| 7 | Support the students to take part and also to conduct technical competitions | | | | | | |
| 8 | Support NSS, Counseling Cell, Students Union and Department Associations | | | | | | |

## (b) Increased learning outcomes of the students

A set of programs to has been planned in line with the objective of the TEQIP II project to increase the learning outcomes of the students and are listed below. These measures are intended to increase the transmission rate, pass percentage, performance appraisal and satisfaction index of the students

- The transition rate of weak students has been increased from 80 to 83 %. With the new equipments added through this project in line with the new scheme and syllabus of the curriculum prescribed by the University of Kerala, students could learn their lessons more effectively, which will enable the weak students to acquire better transition rate.
- The number of library books have increased from 78,000 to 85,000 with the project fund. Up gradation of library facility with more number of volumes of text books in the latest syllabus will enable students to get acquainted with the latest happenings in the core area of the subject.

- E-journals for the year 2014 had been procured using TEQIP fund. The introduction of e-journals and e- books will provide knowledge about the state of the art of the subject concerned. More funding is required for renewal of the subscription of electronic resources for the forth coming years.

- Prepare guidelines for setting questions for assignments for the best usage of learning sources including internet facilities and web sites.

- Encourage students to undertake mini projects of social relevance with the guidance from faculty/NGO's and convert them to product of industrial standard.

- Continuous student's evaluation to identify academically weaker students and arrange remedial classes in the evening and weekends.

- Arrange counseling sessions under counseling cell for needy students facing personal and family problems.

- Organize peer learning group monitored by the advisory group.

- Prepare a guideline for designing dynamic laboratory experiments to inculcate innovativeness in students. With latest software packages, this facility could be provided to the students to use simulation packages for effective design and testing of experiments models before going for practical implementation.

- Organize industrial training programs for the students to understand the developments involved in industries.

- Institute 'Best Teacher Award', based on academic performance of the students and student evaluation that is normally carried out during the end semester, to motivate the faculty to perform their best to the student community.

- Encourage students to undertake project work leading research / industry / academic organizations.

An activity chart of the same is presented below.

**Activity Chart for Increased Learning Outcomes of Students**

| Sl.No | Activity | Project Months | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2015-16 | | | | 2016 | |
| | | April - Jun | July - Sept | Oct - Dec | Jan - March | April - Jun | July - Oct |
| 1 | Up gradation of library facility with more number of volumes of text books in the latest syllabus. | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 2 | Continuous students evaluation to identify academically weaker students. | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 3 | Arrange counseling sessions | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 4 | Organize peer learning groups monitored by the staff advisor | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 5 | Prepare guideline for designing dynamic laboratory experiments | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 6 | Conduct at least one tutorial session per week for each subject | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 7 | Prepare a guideline for setting assignments for the better usage of learning | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 8 | Organize industrial training programs | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 9 | Best Teacher Award based on students evaluation | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 10 | Set up e-learning resource centre | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 11 | Encourage students to do project work at leading Research/Industry/Academic organization | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |

**(c)** **Obtain Autonomous Institution Status within 2 year.**

**Preparedness for autonomy**

The various measures which the college has already adopted for obtaining autonomy are mentioned below

- Obtain accreditation for our college within one year for the eligible courses.

  TKM College of Engineering is already having 2(F) and 12(B) status of University Grants Commission (UGC). This is a mandatory condition for applying for autonomy to colleges under UGC.

- Student's admission for various courses is purely based on merit and is through the Entrance Test conducted by the Government of Kerala.

- Currently, students are provided with elective subject from the V semester onwards. This flexibility in the curriculum with choice of electives already exists.

- There is an effective mechanism currently available for the faculty evaluation by students.

- Our college has 169 permanent faculty and are not transferable. This facilitates easy training of faculty, supporting staff and administrative staff.

- The college has a centralized examination system with a senior faculty member as the Controller of Examinations for the various internal/ university examinations with faculty representative from each department.

- Formulation of the frame work for autonomy is being done. Various committees such as academic council, Grievance cell, Class Committees, Examination committee, Student advisory committees etc... have been formulated with senior faculty members as conveners. Experienced faculty who were exposed to autonomy are present in the institute. Several of our faculty are members in various academic bodies of different Universities such as Senate, Academic councils, Board of Studies, Board of Examinations etc…

- Application has already been Submitted for autonomy to the University and UGC.

**(d)    Achieving the targets of 50% of the eligible UG programs accredited by the end of two year and 100% accreditation by the end of the Project of eligible UG & PG programs.**

Steps will be initiated for all UG and PG programs for accreditation by the year 2016. The activities for achieving accreditation status and the action schedule are given below.

**Action Plan**

- Submission of application for accreditation of all eligible UG and PG programs by June 2015.
- Identify the maintenance requirement and complete the maintenance work of laboratory equipments by June 2015.
- Procurement of required equipments for the modernization and strengthening of the existing laboratories by June 2015.
- Complete maintenance of infrastructure facilities by December 2015.
- Strengthen the library facilities by December 2015.
- Strengthen the Central Computing facility by June 2015 and setting up language laboratory by May 2015.
- Strengthen Research and Development and consultancy services.
- An activity chart of the same is presented below

| Sl.No | Activity | `Project Months | | | | | |
| | | 2015-16 | | | | 2016 | |
| | | April - Jun | July - Sept | Oct - Dec | Jan - March | April - Jun | July - Oct |
|---|---|---|---|---|---|---|---|
| 1 | Submission of Application for accreditation of eligible UG programs | ████ | ████ | | | | |
| 2 | Submission of Application for accreditation of eligible PG programs | ████ | ████ | | | | |
| 3 | Identify the maintenance requirement and complete the maintenance work of laboratory equipments | ████ | ████ | ████ | | | |
| 4 | Procurement of required equipments for the modernization and strengthening of the existing laboratories | ████ | | | | | |
| 5 | Complete the maintenance of infrastructure facilities | ████ | ████ | ████ | | | |
| 6 | Strengthen the library facilities | ████ | ████ | ████ | | | |
| 7 | Strengthen the central computing facility | ████ | | | | | |
| 8 | Setting up of Language Laboratory | ████ | | | | | |

## (e)  Implementation of academic and nonacademic reforms.

### Academic Reforms

TKM College of Engineering is carrying out continuous student evaluation for which the institution is conducting a centralized series test for all UG programs twice during the semester under the examination cell of the institute, with one senior faculty as controller of Examinations.  The members of faculty of the institution have been involved in various activities such as curriculum development, syllabus preparation, syllabus revision, question paper setting and paper valuation in various Universities. Various committees of faculty and students have been formed for management of academic affairs and students welfare. TKM College of Engineering will obtain full academic autonomy after submitting application to UGC. The College has already obtained 2 (F) & 12 (B) status from UGC long back.   Once full academic autonomy is achieved, further academic reforms such as credit system, introduction of dynamic curriculum, etc. can be implemented without any hurdle.

To encourage research culture, the Centre for Engineering Research and Development (CERD) has been established at TKM College of Engineering, Kollam. The CERD aims at coordinating research activities in the institution. The State Government is also promoting the use of Information and Communication Technology (ICT) in teaching –learning process. In the present proposal also, high emphasis is given to the use of ICT and e-learning resources. Since the proposal is in coherence with State policies, there will not be any delay in implementing the components related to ICT. The institution has a team of experts in the software field, who can develop and update the institutional management system. The Campus automation software," Eazy Campus" for generating database of students and their academic and non academic activities is under development. Hence, in order to implement new initiatives through digital means, sufficient in- house capability is available with the college.

### Curricular revision

The revision of curriculum will be done based on the outcomes of a brainstorming session with the leading industries in the fields concerned.

### Innovative practices for curriculum implementation

Smart class based subject delivery and activity and field based studies form    the major innovations in the implementation of the curriculum.

### Key activities envisaged under Academic Reforms:
- Obtain Academic autonomy from UGC.
- Student's transition rate will be assessed and remedial measures will be undertaken.

- Performance and Employability of students will be assessed and corrective means will be accomplished.
- Offering continuing education courses in collaboration with industries for the benefit of students and public. By offering such courses faculty will also get exposed to current trends in the field of activity. The faculty will also be provided with incentives and citations. Introduce elective on subject on state of the art technologies by 2015.
- Content generation for e-learning by 2015.
- Introduce in house e-learning facility by June 2015.
- Implementation of online submission of assignment, online examination system for
- GATE/Corporate for placement activities, etc, December 2015.

An activity chart of the same is presented below:

| SI.No | Activity | Project Months | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2015-16 | | | | 2016 | |
| | | April - Jun | July - Sept | Oct - Dec | Jan - March | April - Jun | July - Oct |
| 1 | Obtain Academi autonomy from UGC | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 2 | Introduction of Credit Based Curriculum | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 3 | Offering continuing education courses in collaboration with industry | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 4 | Introduce elective on subject on state of the art technologies | ▬ | ▬ | ▬ | | | |
| 5 | Content generation for e-learning resources | ▬ | ▬ | ▬ | ▬ | | |
| 6 | Fully fledged e-learning | ▬ | ▬ | ▬ | ▬ | ▬ | |
| 7 | Implementation of online submission of assignment, online examination | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 8 | Online system for faculty evaluation by students | ▬ | ▬ | ▬ | | | |

**Non Academic Reforms**

The state government encourages faculty to pursue higher studies through QIP. On an average, 3-5 faculty members are deputed from this institute every year on QIP for pursuing their higher studies at leading IITs / NITs. The state also provides necessary support for schemes like visiting faculty scheme, training the faculty and staff etc. through the Centre for Continuing Education (CCE), the institution has organized various courses which help in generating Internal Revenue Generation (IRG). By strengthening the CCE activities, the IRG can be further boosted by extending the activities into the areas of consultancy and testing. The institute has already established an Intellectual Property Rights (IPR) cell.

**Key activities envisaged under non academic reforms are presented below.**

As and when vacancies arise, as per rules and procedures, they are being filled up. Suitable and relevant academic and administrative reforms will be done to exercise the autonomy.

- Development of Corpus Fund from Alumni contribution by 2015.
- Incentives for faculty for obtaining research projects, publications and journals, patents etc…
- Strengthen Industry –Institute Interaction Cell activities with support from leading industries.
- Consultancy works with industries/Research organizations.

| Sl.No | Activity | Project Months | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2015-16 | | | | `2016 | |
| | | April - Jun | July - Sept | Oct - Dec | Jan - March | April - Jun | July - Oct |
| 1 | Development of Corpus Fund from Alumni contribution | ▬ | ▬ | ▬ | | | |
| 2 | Incentives for faculty for obtaining research projects, publications in journals, patents | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 3 | Strengthening Industry - Institute - Interaction Cell activities | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 4 | Consultancy works with industries/Research organizations | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |

It can be seen that the institution has the ability to develop as an institution which is self conceived, focusing on quality and relevance, excellence, capable of resource mobilization while maintaining equity, and having greater institutional autonomy with accountability, and giving emphasis on research and developmental activities.

**(f)    Improving interaction with Industry**

Interaction with industry through industrial consultancy and sponsored research will help the institute to maintain contact with the frontiers of knowledge and the latest developments in technology. In this era of continuous innovation and fast changing technology, the curriculum must also be updated continuously to keep pace with time. This can be achieved through industry institute interaction by way of joint research, consultancy and such other exchange programs.

In industrial scenario of Kerala, the State owned public Sector Units (PSU) and the private owned Small Scale Industry (SSI) units are finding it difficult to cope with the technology advancements, owing to the lack of necessary R&D activities. Majority of the PSUs do not have even a Research of Testing Laboratory and the PSUs and SSIs are approaching  other  agencies  to  get  test certification  for  their  products.  Proper interactions of the Institution with such industries can help them to utilize the testing and  research facilities of the institution. This will be made  effective  through  IIIC and CERD centers.

The  following  activities  w e re  planned  for  improving  the  interaction  of  the  institute with industries and these activities are still continuing and an activity chart of the same is presented:

- Signing of MoUs with industrial research organizations - continuing
- Improving IIIC activities
- Strengthen the visiting Executive Program by including more industries.
- Increase the number of industrial student projects
- Offer consultancy to more number of industries / organizations. Take
- up collaborative research projects
- Invite  more  experts  from  industry  for  the  conferences,  seminars  and  other programs.
- Arrange continuing education program based on the needs of the industry and society.
-  Organize  training  programs  for  the  industry  personnel  on  advanced  analytical tools in Engineering.

| Slunk | Activity | Project Months | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2015-16 | | | | 2016 | |
| | | April - Jun | July - Sept | Oct - Dec | Jan - March | April - Jun | July - Oct |
| 1 | Signing of MoUs with Industrial organizations | | | | | | |
| 2 | Improving IIIC activities | | | | | | |
| 3 | Strengthen the visiting Executive Program by including more industries | | | | | | |
| 4 | Increase the number of industrial student projects | | | | | | |
| 5 | Offer consultancy to more number of industries / organizations | | | | | | |
| 6 | Take up collaborative research projects | | | | | | |
| 7 | Invite more experts from industry for the conferences, seminars and other programs | | | | | | |
| 8 | Organize training programs for the industry personnel on advanced analytical tools in engineering | | | | | | |

**(g)    Enhancement of research and consultancy activities.**

The institution has an established a consultancy and research to ensure that more number of faculty to get involved in active research. CERDoffers seed money to start their research projects and encourage the faculty to obtain more sponsored research projects. For enhancing the research and consultancy environment of the institute, the following activities are planned:

- With the introduction of new PG programs the participation of faculty members into research can be increased.
- Start collaborative research project with R&D and industrial organizations like VSSC, ISRO,C-DAC,DRDO,Fluid Control Research Institute (FCRI), Tata Consultancy Services (TCS)/TATAELXSI.
- Support the faculty to publish research papers in refereed journals. Obtain
- Research center status for all departments by December 2015.
- To provide opportunities for short research visit to renowned academic and research organization within India and abroad.
- Support for enhancing citations and patents through Intellectual Property Rights ( IPR) Cell.
- Utilize the lab facility of the institute for testing and calibration of equipments and meters.
- Invite experts from premier institutes to review the research programs and for technical guidance.
- Undertake consultancy projects from Department of Science and Technology DST / AICTE / Council of Scientific and Industrial Research (CSIR) and industries by September 2016.

An activity chart of the same is presented below:

# Activity Chart for Enhancement of Research & Consultancy Activities

| Sl.No | Activity | Project Months | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2015-16 | | | | 2016 | |
| | | April - Jun | July - Sept | Oct - Dec | Jan - March | April - Jun | July - Oct |
| 1 | Start collaborative research project with R&D and industrial organizations | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 2 | Support the faculty to publish research papers in refereed journals | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 3 | Provide opportunities for short research visit to renowned academic and research organizations | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 4 | Support for enhancing citations and patents through IPR Cell | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 5 | Utilize the lab facility of the institute for testing and calibration of equipments and meters. | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 6 | Invite experts from premier institutes to review the research programs and for technical guidance | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 7 | Undertake few consultancy projects from DST / AICTE / CSIR and industries | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ |
| 8 | Obtain Research center status for all Departments | ▬ | ▬ | ▬ | | | |

**4.8 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.**

TKM College of Engineering is organizing orientation classes every year for the first year engineering students belonging to socially and economically weaker sections.    For improving the academic performance of academically weak students the following action plan is formulated:

- Identify academically weak students through examination result analysis and informal discussion among staff and students by the end of first month in each semester and group them to arrange the remedial classes.

- Arrange special Classes for weak students in all subjects in the evenings, weekends and holidays.

- Prepare guidelines for organizing special classes effectively in order to ensure the involvement of all students in the class room though assignments, discussions and debates.

- Arrange a viva voce and written test per week to evaluate the performance.

- Form learning groups inside the class room with proper mixing of students of all categories.

- Conduct an objective test to check the English language proficiency in the first semester and organize classes on regular basis

- 

- Organize training programs, group discussions and debate sessions for enhancing English communication and presentation skills.

- Organize special training programs by professional team on interview skills and group dynamics.

- Organize training programs on IQ and EQ test.

For implementing the above mentioned activities, 4% budget allocation is being proposed. Our Institution has a community program, a Special Training & Empowerment Program for the Under Privileged and minority groups, which aims at making the youth from under privileged class employable.

| Sl.No | Activity | Project Months | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2015-16 | | | | 2016 | |
| | | April - Jun | July - Sept | Oct - Dec | Jan - March | April - Jun | July – Oct` |
| 1 | Identify academically weak students through examination result | | | | | | |
| 2 | Arrange special Classes for weak students | | | | | | |
| 3 | Arrange a viva voce and written test per week to evaluate the performance | | | | | | |
| 4 | Form learning groups inside the class room with proper mixing of students of all categories | | | | | | |
| 5 | Conduct an objective test to check the English language proficiency in the first semester | | | | | | |
| 6 | Organize training programs, group discussions | | | | | | |
| 7 | Organize special training programs by professional team | | | | | | |
| 8 | Organize training programs on IQ and EQ test. | | | | | | |

## 4.9   Action Plan for Strengthening of PG Programs and Starting of New PG Programs.

TKM College of Engineering is currently running four PG programs in Engineering and Technology (Civil Engineering , Mechanical Engineering, Electronics & communication engineering  and Computer Science and Engineering).   Hence this IDP proposes few more new PG programs to start during the project period.

Intake in PG Programs increased from 36 to 72 within two years. Laboratory, library and other facilities are to be upgraded to accommodate this change. In order to strengthen the existing PG programs several activities are planned such as:

- Procurement of required equipments for the modernization and strengthening o f the existing PG Laboratories
- Up gradation of library facility with more number of volumes of text books in the latest syllabus.

The following activities are planned for starting new PG programs and an activity chart of the same is presented:

- ✓ Induct first batch of students to PG program on  Power Systems , NanoTechnology by  2015 and PG program on Transportation Engineering, Industrial safety and Engineering and Urban Planning by 2016.
- ✓ Syllabus and Curriculum preparation by August 2015.
- ✓ Ensure faculty position by August  2015.
- ✓ Setting  up of PG laboratories by  July 2015.
- ✓ Introduction of credit based curriculum, offering courses in collaboration with industries.
- ✓ Content generation for e-learning resources.
- ✓ Signing MoUs with R&D organizations such as IITs and IISc for academic interaction.
- ✓ One journal publication based on the PG project work should be compulsory for the thesis submission by Sepember 2015.
- ✓ Implementation of online submission of assignment, on line examination, etc, by
- ✓ 2015.
- ✓ The college will apply for the approval of the Government of Kerala for sustaining the provision of teaching and research assistantship to non-GATE students even after the closure of the project.

**Activity Chart for Strengthening of PG Programs and Starting of new PG Programs**

| Sl.No | Activity | Project Months | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2015-16 | | | | 2016 | |
| | | April - Jun | July - Sept | Oct - Dec | Jan - March | April - Jun | July - Oct |
| 1 | Induct First batch of students to PG program on Power Systems and Nano-Technology | ▄▄▄ | ▄▄▄ | ▄▄▄ | | | |
| 2 | Syllabus and Curriculum preparation | ▄▄▄ | ▄▄▄ | | | | |
| 3 | Introduction of credit based curriculum | ▄▄▄ | ▄▄▄ | ▄▄▄ | ▄▄▄ | ▄▄▄ | ▄▄▄ |
| 4 | Content Generation for e-learning resources | ▄▄▄ | ▄▄▄ | ▄▄▄ | ▄▄▄ | ▄▄▄ | ▄▄▄ |
| 5 | Signing MoUs with R&D organizations | ▄▄▄ | ▄▄▄ | ▄▄▄ | ▄▄▄ | ▄▄▄ | ▄▄▄ |
| 6 | implementation of online submission of assignment, on line examination | ▄▄▄ | ▄▄▄ | ▄▄▄ | | | |
| 7 | One referred journal publication based on the PG project | ▄▄▄ | ▄▄▄ | ▄▄▄ | | | |

**4.10          Detailed Budget for remaining project period**

**a)  Detailed Budget of IIIC Activities**

|  | Jul-Sep 2015 | Oct-Dec 2015 | Jan-Mar 2016 | Apr-Jun 2016 | Jul-Sep 2016 | Total ( Lakhs ) |
|---|---|---|---|---|---|---|
| Expert lectures | 1 | 1.5 | 1.5 | 1.5 | 1 | 6.5 |
| Industrial visits | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 2.5 |
| Industrial training | 1 | 1 | 1.5 | 1 | 0.5 | 5 |
| MOU | 0.5 | 0.5 | 1 | 1 | 0.5 | 3.5 |
| Workshops | 0.5 | 1 | 2 | 1.5 | 0.5 | 5.5 |
|  |  |  |  |  |  | 23 |

**b)  Detailed Budget of  Institutional Management Capacity enhancement Programs**

|  | Jul-Sep 2015 ( Lakhs) | Oct-Dec 2015 ( Lakhs ) | Jan-Mar 2016 ( Lakhs ) | Apr-Jun 2016 ( Lakhs) | Jul-Sep 2016 (Lakhs) | Total ( Lakhs ) |
|---|---|---|---|---|---|---|
| Attend Management Development Programmes at IIM | 3 | 5 | 3 | 4 | 3 | 18 |
| Conduct Management Development Programmes |  | 2 |  | 2 |  | 4 |
|  |  |  |  |  | Total | 22 |

### c) EAP: Action plan for the remaining period

**EQUITY ACTION PLAN - PROGRAMMES,
PLANNED FOR JUNE2015-DECEMBER 2015**

| Sl. No. | Action | (Expected) Expenditure (Rupees) | Objective / (Expected) Outcome |
|---------|--------|----------------------------------|-------------------------------|
| 1 | Soft skills and communication skill development programme for the III semester students (2014 Admissions) | 1,00000 | To improve usage of English for written and oral communication and other soft skills |
| 2 | Soft skills and communication skill development programme for the V semester students (2013 Admissions) | 1,00000 | To improve usage of English for written and oral communication and other soft skills |
| 3 | Soft skills and communication skill development programme for the VII semester students (2012 Admissions) | 3,00000 | To improve usage of English for written and oral communication and other soft skills |
| 4 | Diagnostic test for the I year | 30,000 | The weak students at the entry level(Plus 2) in mathematics , physics, problem solving & English are to be identified. |
| 5 | Bridge course for the I year students as per the results of diagnostic test. | 50,000 | To help in subject knowledge upgradation at the entry level to make them fit for engineering education. |
| 6 | Remedial Classes for the weak students in II year (All branches together) | 70,000 | To help in knowledge upgradation in the subject area, which will enhance the transition rate. |
| 7 | Remedial Classes for the weak students in III year(All branches together) | 70,000 | To help in knowledge upgradation in the subject area,which will enhance the transition rate. |
| 8 | Remedial Classes for the weak students in Final year (All branches together) | 70000 | To help in knowledge upgradation in the subject area,which will enhance the transition rate. |
| 9 | A bridge course in mathematics for the lateral entry students of III semester | 25000 | Fundamental concepts of Engg. Maths can given to the students. This will help them in understand the III semester mathematics. |
| 10 | Remedial coaching in C++ for the III semester students (Mechanical & production), who are weak in Computer Programming | 40,000 | To improve the programming skills of students those, who have studied biology in the plus two level. |

| 11 | Remedial coaching in C++ for the V semester( Civil and EEE),  who are weak in Computer Programming | 40,000 | To improve the programming skills of students those, who have studied biology in the plus two level. |
|---|---|---|---|
| 12 | A course on virtual laboratory as per the need analysis | 30,000 | To help the students to do the lab experiments, virtually, on a 24x7 basis |
| Total (Rupees) | | **925000** | |

## TARGETS / PLAN EQUITY ACTION PROGRAMMES,
## (JANUARY 2016 – MARCH 2016)

| Sl. No. | Action | (Expected) Expenditure (Rupees) |
|---|---|---|
| 1 | Remedial Classes for the weak students in II year (All branches together) | 50,000 |
| 2 | Remedial Classes for the weak students in III year(All branches together) | 50,000 |
| 3 | Remedial Classes for the weak students in Final year (All branches together) | 50,000 |
| 4 | Invited Talks on employability issues  ( All branches students) | 20,000 |
| 6 | Software Training programme for EEE students | 50, 000 |
| 7 | Introduction to JAVA programming and application development using advanced concepts of JAVA for CSE Branch | 40,000 |
| 8 | Antroid workshop for CSE Branch | 30,000 |
| 13. | ASPEN Training programme Chemical Engg students | 30,000 |
| 20 | Management skill development programme for ME students | 30, 000 |
| Total (Rupees) | | **3,50000** |

## TARGETS / PLAN EQUITY ACTION PROGRAMMES,
## (APRIL 2016 – OTOBER 2016)

| Sl. No. | Action | (Expected) Expenditure (Rupees) |
|---|---|---|
| 1 | Soft skills and communication skill development programme for the III semester students (2015 Admissions) | 100000 |
| 2 | Soft skills and communication skill development programme for the V semester students (2014 Admissions) | 100000 |
| 3 | Soft skills and communication skill development programme for the VII semester students (2013 Admissions) | 3,00000 |
| 4 | Bridge course for the I year students as per the results of diagnostic test. | 50,000 |
| 5 | Remedial Classes for the weak students in II year (All branches together) | 50,000 |
| 6 | Remedial Classes for the weak students in III year(All | 50,000 |

| | branches together) | |
|---|---|---|
| 7 | Remedial Classes for the weak students in Final year (All branches together) | 50.000 |
| 8 | Intensive training/ Finishing school programme for the passed out students | 500000 |
| 9 | Diagnostic test for the I year (2016 Admission) | 15000 |
| 10 | Bridge course for the I year students as per the results of diagnostic test. | 50000 |
| Total (Rupees) | | **1265000** |

## 4.11 Action plan to ensure that the project activities would be sustained after the end of the project

Government of Kerala has introduced many schemes which will assist to sustain the project under TEQIP phase II (Cycle-2). Under MHRD QIP, faculty qualification up-gradation is possible every year. Visiting faculty scheme of the Higher education Department is helping to invite experts from national level institutes and industries to interact with students and faculty on a regular basis. Special Training and Empowerment Program for the Under privileged (STEP4U) has turned out to be an extension of services to community program. ICT initiatives have helped in modernizing the class rooms and converting class rooms into smart class rooms. CERD is acting as a facilitation unit for research activities and is also supported by AICTE research projects. Asset maintenance fund allotted is helping to maintain the laboratory equipments and infrastructure. Infrastructure facilities improvement is possible under various central and state government schemes. For up-gradation of laboratories funding from AICTE MODROBS/ RPS schemes is being utilized.

Apart from these, by strengthening CCE by TEQIP phase II (Cycle-2), it is expected that CCE will be able to support various activities through its enhanced IRG. Similarly, the income fetched through research projects, industrial assistance and alumni assistance will definitely help the institute to ensure sustainability of the project activities after the end of the project.

Creation and establishment of four funds namely, Corpus fund, Faculty Development Fund, Equipment Replacement Fund and Maintenance Fund will ensure sustainability of the reform process beyond the project period. Separate Bank accounts will be opened for each of these four funds and BoG will be authorized for opening these accounts. Institution will take necessary steps to add resources to these funds from various sources. A minimum of 2% of the requirement for the aforementioned funds will be generated from consultancy earnings, donation from alumni, IRG through CCE, and a percentage of fee collection from the students.