

Prof. S.C. Jain

Ph.d, (CSC) IIT, Delhi

DEAN FACULTY AFFAIRS



RAJASTHAN TECHNICAL UNIVERSITY

KOTA 324 010 (Rajasthan) India

Ph. 0744-2473020; FAX : 0744-2473040

E-mail : scjain@rtu.ac.in

To,

State Project Facilitation Unit (SPFU)

Centre for E- Governance

Jhalana Doongri

Jaipur – 302004 Rajasthan

Kind Attention: Dr. Ajay Kaushik, State Project Coordinator

Sub: IDP for participation in Sub-component 1.1 of TEQIP Phase-III

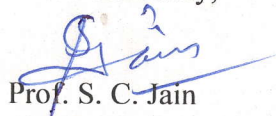
Dear Sir,

With reference to the subject cited above please find enclosed the Institutional Development Plan on behalf of the university teaching departments of Rajasthan Technical University, Kota for participation in the Sub-component 1.1: Improving quality and equity in participating States of TEQIP Phase-III.

This bears the approval of Hon'ble Vice Chancellor.

Thanking you,

Yours Sincerely,


Prof. S. C. Jain

(Dean, Faculty Affairs)

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

PHASE-III

INSTITUTIONAL DEVELOPMENT PROPOSAL

for

Sub-component 1.1:


Institutional Development for Participating Institutions

Submitted by:

**Dean, Faculty Affairs
University Teaching Departments
RAJASTHAN TECHNICAL UNIVERSITY, Kota (Rajasthan) – 324010**

February, 2017

1


**Coordinator, TEQIP-II
Rajasthan Technical University, Kota**


**DIRECTOR
University College of Engg.
Rajasthan Technical University, KOTA**

1. INSTITUTIONAL BASIC INFORMATION

1.1 Institutional Identity

- Name and address of the Institution : RAJASTHAN TECHNICAL UNIVERSITY
AKELGARH, RAWATBHATA ROAD
KOTA 324010
RAJASTHAN
- Year of establishment : 2006
- Is the Institution AICTE approved?: Yes
Furnish AICTE approval No. : North-West/1-2814277329/2016/EOA
Dated 25/4/2016
- Type of Institution : Govt. funded
- Status of Institution : University Teaching Departments
- Name and Designation of Head of the Institution (Full time appointee) : Prof (Dr) S. C. Jain, Dean, Faculty Affairs

1.2 Academic Information:

- Engineering UG and PG programmes offered in Academic year 2016-17:

S. No.	Title of programmes	Level (UG, PG, PhD)	Duration (Years)	Year of starting	AICTE sanctioned annual intake	Total student strength in all years of study
1.	B.Tech Civil Engineering	UG	4	Jul-81	120	534
2.	B.Tech Mechanical Engineering	UG	4	Jul-81	60	283
3.	B.Tech Electrical Engineering	UG	4	Jul-81	90	427
4.	B.Tech Electronics & Communication Engineering	UG	4	Jul-89	60	253
5.	B.Tech Computer Science and Engineering	UG	4	Jul-90	60	273

6.	B.Tech Electronics Instrumentation & Control Engineering	UG	4	Jul-90	30	140
7.	B.Tech Production and Industrial Engineering	UG	4	Jul-90	30	115
8.	B.Tech Information Technology	UG	4	Jul-00	30	121
9.	B.Tech Aeronautical Engineering	UG	4	Jul-11	30	115
10.	B.Tech Petroleum Engineering	UG	4	Jul-11	30	121
11.	B.Tech Petro-Chemical	UG	4	Jul-13	30	122
12.	M.Tech Geotechnical Engineering	PG	2	Jul-09	18	22
13.	M.Tech Structural Engineering	PG	2	Jul-09	18	35
14.	M.Tech Computer Science and Engineering	PG	2	Jul-09	18	34
15.	M.Tech Power System	PG	2	Jul-09	18	32
16.	M.Tech Control & Instrumentation	PG	2	Jul-09	18	24
17.	M.Tech Digital Communication	PG	2	Jul-09	18	34
18.	M.Tech Machine Design	PG	2	Jul-09	18	31
19.	M.Tech Renewable Energy	PG	2	Jul-09	18	25
20.	M.Tech Industrial Management Engineering	PG	2	Jul-09	18	12
21.	M.Tech Environmental Engineering	PG	2	Jun-10	18	21
22.	M.Tech Nano Technology (Electromechanical)	PG	2	Jul-12	18	6
23.	Ph.D Civil Engineering	PG	FT:5 Sem PT:8 Sem	Jul-10	Admissions are given as per RTU PhD ordinances. Maximum 8 scholars are	19
24.	Ph.D Computer Science	PG		Jul-10		15
25.	Ph.D Electrical Engineering	PG		Jul-10		32
26.	Ph.D Electronics Engineering	PG		Jul-10		44

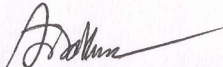
27.	Ph.D Mechanical Engineering	PG		Jul-10	permitted to eligible supervisors	26
28.	Ph.D Nanotechnology	PG		Jul-13		02
29.	Ph.D Renewable Energy Technology	PG		Jul-13		0

- **NBA Accreditation Status of UG and PG programmes as on 31st December 2016:**

Total no of programmes eligible for accreditation (at least one batch pass out):**22**

No. of programmes accredited: **01 (PG)**

No. of programmes applied for accreditation: **05 (UG)**


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- Status of Faculty Associated with Teaching Engineering Students (Regular & Contract) as on 31st December 2016:

No. of Sanctioned Regular Posts	Present Status : Number in Position by Highest Qualification												Total Number of regular faculty in Position	Total Vacancies	Total Number of contract faculty in Position
	Doctoral Degree				Masters Degree				Bachelor Degree						
	Engineering Disciplines		Supporting Disciplines(Physics, Chemistry, Maths and English/ other languages		Engineering Disciplines		Supporting Disciplines(Physics, Chemistry, Maths and English/ other languages		Engineering Disciplines		Supporting Disciplines(Physics, Chemistry, Maths and English/ other languages				
	R	C	R	C	R	C	R	C	R	C	R	C			
1	2	3	4	5	6	7	8	9	10	11	12	13	14= (2+4+6+8+10+12)	15=(1-14)	16= (3+5+7+9+ 11+13)
263	45	0	10	8	44	52	0	3	3	0	0	0	102	151	63

R=Regular, C=Contract


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2. INSTITUTIONAL DEVELOPMENT PROPOSAL (IDP) (Implementation period: April 2017- March 2020)

2.1 Give the Executive Summary of the IDP (max 2 pages)

The Rajasthan Technical University is aimed at:

Vision

To achieve academic excellence in Engineering by imparting in depth knowledge to the students, facilitating research activities and cater to the ever changing industrial demands, global and societal needs.

Mission

- To provides quality engineering education to the students.
- To offer state of art education in engineering.
- To establish Industry Institute Interaction to make students ready for the industrial environment.
- To promote research based projects/activities to develop department as Center of Excellence for research.

The Rajasthan Technical University was established in the year 2006 by Rajasthan State Government with University College of Engineering (UCE), erstwhile Engineering College Kota, as its only constituent college. In 2015 the status of UCE has been changed to University Teaching Departments with six departments namely, Civil Engineering, Mechanical Engineering, Electrical Engineering, Electronics and Communication Engineering, Computer Engineering, and Humanities and Applied Sciences. The powers and responsibility of Director, UCE has been given to the senior most professor among the departments as Dean, Faculty Affairs. The Board of Management and Academic Council of the university govern the administrative and academic functioning of the departments.

The UCE has been a beneficiary institute in the TEQIP-II. Main achievements of TEQIP-II are as follows.

- Strengthening of UG-PG laboratories, Library facilities

- Faculty and Staff development through participation in Conferences / Seminars / Workshops / STTP etc.
- Support to students through assistantship, expert lectures, participation in conferences, organizing study tours, project development, and remedial classes for academically weak students etc.
- Modernization of class rooms, campus-wide Wi-Fi access
- Creation of four funds

The TEQIP-III project is definitely a welcome step of GOI and shall help in sustaining the efforts initiated for (i) improving academic performance of the faculty and students and (ii) implementation of academic / non-academic reforms. Following outcomes are expected through the proposed activities.

- Increase in transition rate of UG students moving from first year to second year
- Increase in percentage of PhD students enrolment in engineering discipline
- Increase in students placement rate
- Increase in percentage of filled faculty positions
- Increase in number of faculty trained in subject domain, pedagogy or management
- Increase in percentage of externally funded R&D projects and consultancies
- Modernization and strengthening of UG and PG labs
- Establishment of new laboratories and R&D activities
- Procurement of furniture for existing and new labs, library, classrooms and computer centres
- Modernization of Classrooms with smart boards, Computers linked with LCD projectors with screen, video conferencing etc.
- Strengthening of library facilities by updation of learning resources and online access to learning resources
- Refurbishment/repair/extension of existing building
- Sustainability funds created

It is proposed to achieve the goals of TEQIP-III by involving stake holders viz. faculty, staff and students through various executive bodies under following nodal officers.

- Nodal officer, Equity Action Plan
- Nodal officer, Academics

- Nodal officer, Procurement
- Nodal officer, Finance
- Nodal officer, Industry-Institute-Interaction
- Nodal officer, MIS

A project monitoring committee shall monitor progress of the project activities. In order to execute the project activities in proper manner following steps shall be taken.

- Equal share of procurement funds shall be allocated among all departments
- Departments shall submit six monthly plan for faculty and staff training, organizing FDPs and students' support activities
- Support to students shall be ensured through an equity action plan.

2.2 Provide an action plan with timelines for : (not more than 1 page for each sub-activity)

(a) Improving the learning outcomes of the students

1. Faculty training (qualification upgradation, subject upgradation & research competence, Pedagogical training, participation in conferences, seminars/workshops etc.)

- The rules and procedures are in place to provide opportunity to teaching faculty for qualification upgradation on full time or part time basis. Among existing faculty strength approx. 53% faculty are having PhD qualification and 44% are having Master's qualification. All faculties with Master's degree shall be encouraged and provided financial support from the project to upgrade their qualifications to Doctoral degree either within institution or at other institution within India.
- Enhancement of subject knowledge and research competence is necessary for improving performance of a faculty. Under TEQIP-II many faculty members have been deputed to participate in STTPs/CEPs/Conferences/Seminars/Workshops etc. organized in premier institutions for improving domain knowledge as well as for presenting research papers. Such activities shall be continued in TEQIP phase-III as well.
- For effective implementation faculty members shall be asked to identify the opportunities and submit proposals for participation in such programmes, summer schools, CEPs etc. available in 6 months to one year duration.

- In order to improve the teaching and training competence of teaching faculty, pedagogical training shall be arranged by inviting premier institutions under twinning arrangement or otherwise.
- Moreover, in order to boost research activities and establishment of collaborative programmes for enhancing academic activities, MOUs shall be signed with premier institutions and research laboratories for benefit of all engineering and supporting departments.

2. Staff training (Technical & Administrative staff)

There are two types of staff (i) Technical and (ii) Administrative.

- The Technical Staff in laboratories and workshops need to be trained in their functional areas including operation and routine maintenance of both the existing and new equipment. They also need training on workshop instructions, upkeep of institutional service facilities, etc. The technical staff also need to be motivated and encouraged to participate in training and to use the newly acquired expertise for the benefit of students and the institution.

Under TEQIP-II some technical staff members were deputed to other institutions for training. With the continued efforts in TEQIP phase-III staff members shall be provided opportunities to obtain necessary training to upgrade their knowledge and skills.

- The Administrative Staff also need training in respective functional areas, particularly in the use of modern office equipment, software, office automation, maintenance of records, procedures, etc. all necessary steps shall be taken to provide opportunities to administrative staff to obtain required training.

3. Increasing capacity of UG, PG and PhD education (increasing enrollment and starting new UG, PG and PhD programmes)

Presently there are 12 master's programmes with intake of 18 in each and equal number of doctoral specializations. All MTech students and meritorious research scholars are provided assistantship as per university norms. TEQIP funds shall be utilized to grant scholarship to MTech students and doctoral students. All efforts shall be made towards achieving 100 % enrolment in MTech and doctoral courses.

Proposal shall be submitted to academic council for approval for increased intake in MTech courses with consistent record of nearly 100 % enrolment.

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

- TEQIP-II funds have been utilized for modernization of eight class rooms with smart boards and one virtual class room with video conferencing and simultaneous streaming of video lectures; Wi-Fi access for hostels, instructional building, administrative block, library etc. The academic building, library area, and hostel area have been covered for Wi-Fi access.
- In the TEQIP phase-III it is proposed to (i) modernize one class room in each department as virtual class room with the facility of LCD projector & screen, video conferencing, audio conferencing etc. and (ii) cover remaining part of the campus by Wi-Fi access.
- Steps have already been taken for digital library. The Library is equipped with 40 computers, access of journals like Science Direct for engineering and Emerald, Wi-Fi, membership of Inflibnet etc. There is need to purchase e-books, access to e-journals such as IEL online, ASME, ASCE, JGATE etc. there are more than one lakh text and reference books, however more reference books are required. Further automation of library may be implemented using RFID and detection system.

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


There is a need on regular basis for taking all necessary measures to identify and support academically weak students as well as the students who come from socially and economically underprivileged groups with the primary objectives of improving (i) their academic performance (ii) the transition rate of First Year students moving to Second Year and (iii) their employability. An Equity Action Plan shall be prepared to ensure improvement in the performance of students with special attention to needy and ST, SC categories. Following activities are proposed.

- Diagnostic tests to identify student weaknesses

- Remedial class for academically weak students
- Improving non-cognitive skills of students
- Appointing faculty advisors for students
- Organizing bridge courses
- Providing course material/notes for better learning
- Use of modern teaching methods for improving teaching-learning process
- Special classes for improving communication skills, personality development for improving employability
- Finishing school for better placement

6. Instituting academic and non-academic reforms including programme flexibility (Is there any need to revise the curriculum? When it was last revised?)

- The procedure is in place for revision of curricula and syllabi every three years through board of studies. The constitution of board of studies involves members from industries and research laboratories.
- Revision of curricula shall include scope for effective teaching and evaluation methods, creative and innovative thinking of student, invited expert lectures from industries, visits to industries etc.
- Effective mechanism shall be implemented of students performance evaluation with greater transparency
- Mechanism of evaluation of faculty performance by students on periodic basis shall be implemented with the aim to help faculty member to improve his/her teaching skills.
- The university has taken decision in principal to grant autonomous status to each department. The framework and making of regulations for the same is under process. The university has also taken a decision to implement choice based credit system (CBCS) which will allow flexibility to student in selection of courses.
- Establishment of sustainability funds (four funds) shall be created as per project guidelines to continue activities beyond project period.
- The system allows adequate financial and administrative powers, responsibilities and decision-making to senior functionaries.


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(b) Improving employability of the students

7. Increasing interaction with industry (What are the industries located in the vicinity? What role of industry is perceived for the institute?)

The fully functional Industry-Institute-Interaction Cell (IIIC) cell exists in the university. Industries In the vicinity of Kota are mainly in the field of power generation, cement manufacturing, mining, textile, electronics and IT sector etc. Following activities are proposed to strengthen interaction with industries.

- Organizing workshops and seminars with joint participation of industries.
- Expert lectures by industrialists and consultants.
- Participation of experts from industries in Board of studies for curriculum development.
- Consultancy by expert faculty to solve industrial problems.
- Collaboration with industries to promote joint research programmes, training of students, exposure to students to new technologies, take expertise in curriculum revision, providing opportunities to student groups to undertake problem-solving projects, improving students' employability, and entrepreneurial training etc.
- MOUs with industries for mutual benefit

8. Student career counseling and placement

The fully functional Training and Placement Cell exists in the university to assist students in placement and career planning. Following activities shall strengthen placement rate.

- Invited lectures by experts and consultants for improving domain knowledge and soft skills of students
- Guidance for resume preparation, mock tests and interviews, group discussion etc.
- Organizing training programmes in specialized area
- Industrial visits
- Establishing network with premier industries for campus visits
- Establishing finishing school

(c) Increasing faculty productivity and motivation

9. Sponsored research, consultancy and other revenue generating activities

The administrative procedure for providing testing and consultancy services to external agencies is in place. The Civil Engineering department has been involved this activity and bringing revenue to the university. Necessary steps are required to motivate other departments to identify avenues for revenue generation. Following measures may be taken for increasing number of sponsored R&D projects from external agencies.

- Provide seed grant for research to faculty members and /or students to venture into innovative research
- Incentives to faculty members for award of sponsored projects
- Encouraging all faculty members to obtain externally funded research projects
- Creating necessary facilities to strengthen research activities in departments
- Enhancing interaction with premier institutes, R&D labs, and industries for taking up collaborative research projects

2.3 Provide an action plan with timelines for

1. Obtaining autonomous institution status from UGC

The Rajasthan Technical University exercises autonomy under section 2(f) of UGC. The university has created five engineering departments and Applied Sciences department with academic autonomy principally approved by the Academic Council and Board of Management.

2. Improving the NBA accreditation status

The action plan for submission of prequalifier/new application/compliance for NBA accreditation of eligible UG and PG programmes is given below.

B Tech. Programmes- Prequalifier aimed to be applied in October 2017	
1.	Mechanical
2.	Electrical
3.	Electronics & Communication
4.	Electronic Instrumentation & Control
5.	P & I
M. Tech. Programmes- Compliance/new application aimed to be applied in Dec 2017	
1.	M Tech Power Systems
2.	M Tech Machine Design
3.	M Tech Control & Instrumentation
4.	M Tech Digital Communications
B Tech and M Tech. Programmes- Prequalifier/Application aimed to be applied in July 2019	
1.	Civil- B Tech

2.	Computer- B Tech.
3.	Information Technology- B Tech
4.	Aeronautical
5.	Petroleum
6.	M. Tech IEM
7.	M. Tech Environmental Engg
8.	M. Tech Structural Engg

B Tech, MBA and M Tech. Programmes- Prequalifier/Application aimed to be applied in July 2020	
1.	B Tech.- Petrochemical Engg
2.	M. Tech.- Renewable Energy
3.	M Tech- Computer Science & Engg
4.	MBA

2.4 Describe the following in brief:

- 1. Is any enhanced assistance / mentoring that the institution is looking forward from its ATU?**

As university teaching departments (of the erstwhile constituent college) the required assistance and support from the Rajasthan Technical University is built-in.

- 2. Does your BoG need strengthening, if yes, then how?**

The constitution of Board of Management (BOM) of the university is as per the provisions in the Act. However, more representations from Academicians and Industrial Houses shall strengthen its performance vis-à-vis good governance. Decisions of Board of Management must be binding on all concerned including state government.

- 3. Is there an ERP/MIS system existing, if yes, then any improvement, modification suggested.**

An ERP/MIS system exists only partially. It is proposed to utilize the project funds for procurement of complete ERP system with necessary hardware and software for data management and efficient working of Proctor section (managing student data), Examination, Establishment, and Finance departments.


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14


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4. Is there any mechanism i.e. special classes being conducted in the institution for improving the GATE score?

Yes, special classes are being conducted by institute faculty members and alumni.

2.5 Provide a Twinning Plan with a high performing institute with the objective of capacity building knowledge transfer and developing long term strategic partnerships. (Twinning plan will be formalized into Twinning agreement after finalizing the twinning partner)

Twinning agreement with the high performing institution shall be aimed to undertake following activities.

- Faculty and students exchange programmes
- Organizing joint conferences and research activities
- Interaction of members of BOG/BOM
- Optimum utilization and sharing of resources
- Developing long-term strategic plan

2.6 Is there any difficulty in Recruitment and selection of high-quality faculty? If yes, what are the reason & action plan to solve the issue?

- The faculties recruited at entry level are kept on probation for two years and at fixed salary as per rules.
- Recruitment at the level of Assistant Professor is under process.
- At present, vacancies of faculty positions against sanctioned posts are filled on 11 months contract. Duration of contract period may be increased, subject to directions from State Govt.
- Contractual faculties (guest faculties) may be given full payment as per AICTE rules and they may be counted in Student/Faculty ratio.

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

In compliance of the requirement of TEQIP III Sustainability Funds (four funds namely, Corpus fund, Faculty Development Fund, Equipment Replacement Fund, and Maintenance Fund) shall be created as per the project guidelines. After the completion of the project these funds shall be utilized for continuing the reforms initiated in TEQIP II and TEQIP III. Following activities shall be supported from this fund.

- Increasing revenue generation through variety of activities such as self-financing teaching and training programmes, testing and consultancy services, innovative research, commercialization of R&D outputs, sharing of high-tech equipment with industries etc.
- Filling up of teaching and staff vacancies on 11 month or longer contract as directed by state government.
- Sustenance of autonomy level with respect to academic, administrative, and financial.
- Sustenance of reforms in teaching-learning, research and institutional governance through twinning arrangement, accreditation of all eligible courses etc.
- Disbursement of scholarship/assistantship to PG and doctoral students shall be continued.

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

A meeting of all Heads of Departments was arranged to take inputs on various points for preparing IDP. Inputs were also sought from all faculty members. The final IDP has been made available on university web site for all faculty and students to give feedback for any revision/improvement deemed necessary.


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