

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

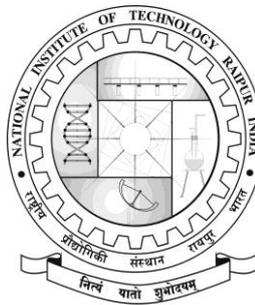
PHASE-III

INSTITUTIONAL DEVELOPMENT PROPOSAL

for

Sub-component 1.3

***Twinning Arrangements to Build Capacity and
Improve Performance of Participating Institutes***



**NATIONAL INSTITUTE OF TECHNOLOGY
RAIPUR**

(NIT RAIPUR)

(Institute of National Importance)

RAIPUR (C.G.) 492001

Preamble

Government Engineering College Raipur started on 1956 with two undergraduate programs namely Mining and Metallurgical Engineering has been upgraded to National Institute of Technology, Raipur by the Central Government on 1st Dec 2005. The institute with largest number of undergraduate programs in the central region had been working since last few decades with a mission to produce human resource to cater to the needs of industries and community in large.

The proposal for further development of institute under TEQIP phase III is presented in the form of Institute Development Plan (IDP) consists of brief details related to the activities planned in the project period. The resource requirement and a tentative action plan are also presented for the proposed activities. All efforts will be made to make the activities sustainable at the end of the project period.

Proposal in TEQIP III is focussed to Build Capacity and Improve Performance of Participating Institutes through twinning arrangements. Mentorship will be provided in the mutually agreed areas and a tentative list of areas is included in the proposed IDP. Institute has enough experience and has developed capabilities to mentor other institutes in the vicinity.

1. INSTITUTIONAL BASIC INFORMATION

1.1 Institutional Identity

- Name and address of the Institution : National Institute of Technology,
G.E. Road Raipur (Chhattisgarh)
- Year of establishment : 1956
- Is the Institution AICTE approved? : Not Applicable, as it is an autonomous institute under NIT Act
- Furnish AICTE approval No. : ---
- Type of Institution : ~~Govt. funded/ Govt. aided/~~NIT
- Status of Institution : ~~Autonomous Institution Status by UGC/NIT~~
Technical University
- Name and Designation of Head of the Institution : Dr. Sudarshan Tiwari
(Director of the Institute)
(Full time appointee)

1.2 Academic Information:

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

S. No.	Title of programme	Level (UG, PG, Ph.D.)	Duration	Year of starting	AICTE Sanctioned annual intake	Total student strength in all years of study As on 15/02/17
1	Biomedical Engineering	UG	4	2003	62	134
2	Bio Technology	UG	4	2003	62	149
3	Chemical Engineering	UG	4	1962	62	196
4	Civil Engineering	UG	4	1958	78	308
5	Computer Science & Engineering	UG	4	2008	92	359
6	Electronics & Telecommunication	UG	4	1985	92	362
7	Electrical Engineering	UG	4	1958	92	359
8	Information Technology	UG	4	2000	92	336
9	Mechanical Engineering	UG	4	1958	92	361
10	Metallurgical Engineering	UG	4	1956	92	317
11	Mining Engineering	UG	4	1956	77	282
11	Architecture	UG	5	1984	62	260
12	Water Resources Development & Irrigation Engineering	PG (Civil)	2	1986	17	25

13	Structural Engineering	PG (Civil)	2	2014-15	13	17
14	Power System & Control	PG (Electrical)	2	2014-15	25	39
15	Thermal Engineering	PG (Mechanical)	2	2010-11	17	22
16	Industrial Engineering & Management	PG (Mechanical)	2	2014-15	13	19
17	Machine Design	PG (Mechanical)	2	2014-15	13	19
18	Information Technology	PG (IT)	2	2016-17	25	34
19	Applied Geology	PG (Applied Geology)	3	1961	15	41
20	Chemical Process Design	PG (Chemical)	2	1997-98	25	9
21	MCA	PG	3	1986	92	252
22	Ph.D	Ph.D	4Yr (Fulltime) & 6Yr (part-time)	2009-10	NA	307 (FT – 147 & PT – 160)

- 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): 11 (All UG), 4(PG).

No. of programmes accredited: 6UG & 1PG (Civil, Chemical, Mechanical, Mining, Electrical and Electronics and Telecommunication & Thermal Engineering(PG))

No. of programmes applied for accreditation: 3PG (Applied Geology, Chemical Engineering Process, Water resources development and irrigation), result is awaited.

- 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)
266	97	8	27	11	38	64	-	3	-	9	--	--	162	104	95

R=R-Regular, C=Contract

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

2.1 Give the Executive Summary of the IDP. Also include the mission and vision statement of your institution (max 2 pages).

National Institute of Technology Raipur (Former Government Engineering College Raipur), situated in the capital of Chhattisgarh, has proven to be 'avant-grade' in the field of science and technology over past few decades in this region, with sweet memory of foundation ceremony by our president Hon'ble Dr. Rajendra Prasad on 14th September 1956. Institute started with two departments namely Metallurgical and Mining Engineering. Later the inauguration of the Institute building was done by our Prime Minister Hon'ble Pt. Jawahar Lal Nehru on 14th March 1963. From 1st December 2005, the institute has been upgraded to the status of National institute of technology, and is identified as NIT Raipur.

The Institute, located in Raipur, the Capital City of Chhattisgarh State, is spread over an area of 100 acres. Many industries, such as those of cement, steel, steel alloy, mines, mineral processing etc., are located in the vicinity of the institute giving it a unique advantage for industry-institute interaction in various disciplines of engineering.

Starting with two branches in 1956 the institute has grown in tandem with the major surrounding industries - Bhilai Steel Plant, SECL, BALCO and NTPC, Korba - and presently offers 12 undergraduate and 10 Postgraduate courses including M.C.A and M.Tech. in Applied Geology. Institute offers facilities for Ph.D. and also under takes R & D activities, provides testing, consultancy and other extension services including continuing education to the industry through the Continuing Education cell and the placement of the student through the Department of Training and Placement. Students have brought laurels to the institute and are very well placed in Government organisation, Public and Private Sectors, Multinational Companies, Universities, research organisation in India and abroad.

The institute has a well - organised, magnificent building symbolising the grandeur of the institute. This huge building alone covers a total area of 62060 sq.m. It is a triple storied planned structure along with a central tower standing to the height of 23 meters. There are 44 lecture halls extending over an area of 6675 sq.m & 13 drawing halls/studios extending over an area of 3510 sq.m. about 88 labs over an area of 11510 sq.m. Other amenities comprise of a canteen, cycle stand, N.C.C, N.S.S, a student activity centre, co-operative store and well established dispensary. Institute building is further extended to a separate architecture department. Institute has 6 boy's hostels and 2 girl's hostels to accommodate the inmates. Institute also have central library with a good store of print and e-books. Institute campus also has two fully air-conditioned auditoriums and a small guest house.

Location

Raipur, the capital of Chhattisgarh, has been the place of strategic importance- being the gateway to the mineral rich Chhattisgarh state, having an enormous potential for development with seemingly inexhaustible natural resources. The location of this institute is in the vicinity of Bhilai steel plant. Raipur is well connected through Air-Routes from Mumbai, New Delhi, Chennai, Bhubaneswar, Vizag, Nagpur and Kolkata.

Vision

To be a leader in technical and management education in India and to establish a unique identity for the development of high quality human and knowledge resource in diverse area of technology and management.

Mission

To reengineer the engineering education and to mould young students into rational thinking engineers who are motivated by a passion for professional excellence driven by human values and proactively engaged in betterment of society.

Objectives

- Creating an environment to make teaching more learning centric rather than curriculum centric.
- To attract and retain highly qualified, talented, motivated staff.
- To focus not only on quality education but on total quality management of NIT Raipur.
- To provide good academic support facilities (Lab, Library, Internet) on continuous basis.
- To develop industry institute interface for collaborative research, internship and fellowship.

2.2 Provide an action plan with timelines for:

Activities under different objectives are listed below and timeline is provided in table 2.1.

(a) Improving the learning outcomes of the students

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

Faculty Development will be carried out through the following main activities.

- Improving competence in teaching-training through pedagogical training.
- Development of modern learning resources and teaching aids through procuring.
- Participation in seminars, conferences and workshops.
- By establishing linkages with academic and research institutions and Industry.
- By participating in Continuing Education Programme.
- By organising and attending Expert lectures from industry and academia.
- By supporting faculty research activities.

2. Staff training (Technical & Administrative staff)

- By arranging training programs for technical and non technical staff.

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

- By providing additional scholarships to PG and Ph.D. students for increasing the 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.

- Purchase of equipment related to smart class rooms and campus WiFi or broadband connectivity.

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.

- By arranging remedial classes for academically weak students.
- By arranging Skill development classes and Finishing school.

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

- By supporting activities related to NBA accreditation.
- Revision of curriculum and scheme (the last revision of curriculum was carried out in 2011).

(b) Improving employability of the students

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

Large Industries like BSP, Jindal, BALCO, CSEB, NTPC, STPC, SECL, NMDC, LANCO etc are located in the state. Institute is providing the support by means of consultancy and testing services. Additionally we are also extending our support to small and medium scale industries as well. The activities like expert lectures from industry personnel, industrial visit of faculty, staff & students, internships and other collaborative activities are also carried out.

2. Student career counseling and placement

Activities like soft skill development, Finishing schools, Internships are planned to improve the placement rate.

(c) Increasing faculty productivity and motivation

1. Sponsored research, consultancy and other revenue generating activities

Institution is encouraging PG/PhD students to get associated with Industry oriented/sponsored research programmes under the guidance of faculty members. This is expected to increase their interest in higher education and research. Institutions is also offering "Seed grant" for research to faculty members and financial support to students to venture into innovative research and to strengthen research culture in institutions.

Institute will encourage the consultancy activities and CEC activities by following the best practices of other institute for internal revenue generation. Support to patent/incubation/start-ups activities will also be carried out.

**Table 2.1
Proposed Activities in TEQIP -III**

S.N	Particular	2017 - 18		2018 - 19		2019-20		Total
		No	Cost	No	Cost	No	Cost	
(a) Improving the learning outcomes of the students								
A1	Faculty training (qualification up gradation, subject up gradation & research competence, Pedagogical training, participation in conferences, seminars/workshops etc.)	30	40.00 lakhs	40	50.00 lakhs	50	60.00 lakhs	1.50 Cr
A2	Staff training (Technical & Administrative staff)	20	10.00 lakhs	30	15.00 lakhs	30	15.00 lakhs	0.40 Cr.
A3	Increasing capacity of UG, PG and PhD education (increasing enrolment and starting new UG, PG and PhD programmes)	12 Ph.D. + 9 PG	60.00 lakhs	12 Ph.D. + 9 + 9 PG	75.00 lakhs	12 Ph.D. + 9 + 9 PG	75.00 lakhs	2.10 Cr.
A4	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	--	30.00 lakhs	--	30.00 lakhs	--	--	0.60 Cr.

	2 MBPS speed for each connection)), e-library etc.							
A5	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	--	10.00 lakhs	--	10.00 lakhs	--	10.00 lakhs	0.3 Cr.
A6	Instituting academic and non-academic reforms including NBA accreditation, programme flexibility (Is there any need to revise the curriculum? When it was last revised?)	--	25.00 lakhs	--	10.00 lakhs	--	35.00 lakhs	0.7 Cr.
(b) Improving employability of the students								
B1	Increasing interaction with industry (What are the industries located in the vicinity? What role of industry is perceived for the institute?)	--	10.00 lakhs	--	10.00 lakhs	--	10.00 lakhs	0.3 Cr.
B2	Student career counselling and placement		5.00 lakhs		5.00 lakhs		5.00 lakhs	0.15 Cr.
(c) Increasing faculty productivity and motivation								
C1	Sponsored research, consultancy and other revenue generating activities		20.00 lakhs		20.00 lakhs		20.00 lakhs	0.6 Cr.
(d) Other activities								
	Other operational activities		10.00 lakhs		10.00 lakhs		15.00 lakhs	0.35 Cr.
							TOTAL	7.00 Cr.

2.3 Describe the following in brief:

- 1. Is there an ERP/MIS system existing, if yes, then any improvement, modification suggested.**
MIS system exist in our institute, Annex 1, and is used for academic activities like registration in various courses, examination and evaluation related activities, result analysis etc for UG, PG and Ph.D. students. Enhancement of MIS is further required in the area of office automation to perform the activities like, salary slip generation, office orders preparation, procurement and finance related activities etc.
- 2. Is there any mechanism i.e. special classes being conducted in the institution for improving the GATE score?**
There is no such mechanism in our institute for improving the GATE score, however faculty members while teaching the various courses are taking care of the above.

2.4 Please identify some endeavours and joint activities that you would undertake with the institution of focus state under sub-component 1.1 for twinning arrangement from among the ones listed below and/or any further ones and provide the yearly action plan for 3 years:

Information shown below in percentages indicates proposed rate of improvement in a particular activity from the base line data while the numbers in the table indicates no. of programmes/no. of persons going to be benefitted from the proposed activities.

S. No	Suggested Activity/Indicator	Proposed Action	Target (number, %age, stage etc.) for institution under sub-component 1.1 over the baseline, if applicable		
			2017-18	2018-19	2019-20
1	Increase in student graduation rates	Faculty pedagogical training	10%	20%	20%
2	Improved Placement of graduates a) Placement Rate b) Placement Package	Collaborative activities under placement cell	10% 10%	10% 10%	15% 15%
3	Increase in GATE qualified graduates	To be explored	-	-	-
4	Smart classrooms	Required advices will be given	1	2	2
5	e-books and e-Journals	Required advices will be given	10%	10%	20%
6	Increase in publications in referred journals	Collaborative research, thesis, guidance, sharing of labs/ libraries etc.	10%	10%	20%
7	Seminars, meetings and conferences for students and faculty for training and academic development	Seminar/ workshop/ expert lecture	5	5	10
8	Sharing of faculty for teaching processes	To be explored	--	--	--
9	Faculty exchange for research and development purposes	To be explored	--	--	--
10	Student exchange at the PhD, Masters and Undergraduate levels	To be explored	--	--	--
11	Joint supervision of PhD and/or Masters' student	Yes	3	5	10
12	Joint activities with industry for joint R&D, internships and placement activities	Yes	5	5	5
13	Seminars and learning forums on improving governance practices	Yes	2	2	2
14	Improvement in NBA accreditation (including applied for cases)	Yes	--	2	2
15	Helping in Grant of UGC Autonomy for non-autonomous institution	NA	--	--	--
16	Any other form of endeavour	Based on IDP, further activities can be planned.	--	--	--

2.5 Identify the outreach programmes and systems which are already in place in your Institute to succeed in your role of twinning for strengthening of other institutions viz. related to faculty/students/non-teaching staff/Industry etc.

The outreach programmes and systems which are already in place in our institutes are Continuing Education Cell (CEC) (Annex 2) and NKN facility. Short Term Training Programmes (STTP)/Workshops can be organized by different departments. Training through distance education with the help of NKN facility can also be carried out.

2.6 Identify the academic and/or administrative challenges that you anticipate in your role of twinning and the mechanism that you have put in place and/or intend to put in place, to address these challenges.

- Lack of faculty strength in the other institutions could be a hindrance in executing the activities.
- Financial and Academic autonomy will also be required to carry out the activities smoothly.
- Quick administrative decisions will also be required.
- Administrative challenges will be resolved by committees constituted i.e. Coordinators and members from both the institutes with mutual understandings. Guidance will be sought from other higher institute and NPIU as and when required.

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

At present there are no difficulties in recruitment and selection of high-quality faculty members at Assistant Professor Level, however modifications are required in MRR for recruitment at Associate Professor and Professors Level.

2.8 Give an action plan for long term strategic partnership with the mentee institute after the end of the Project.

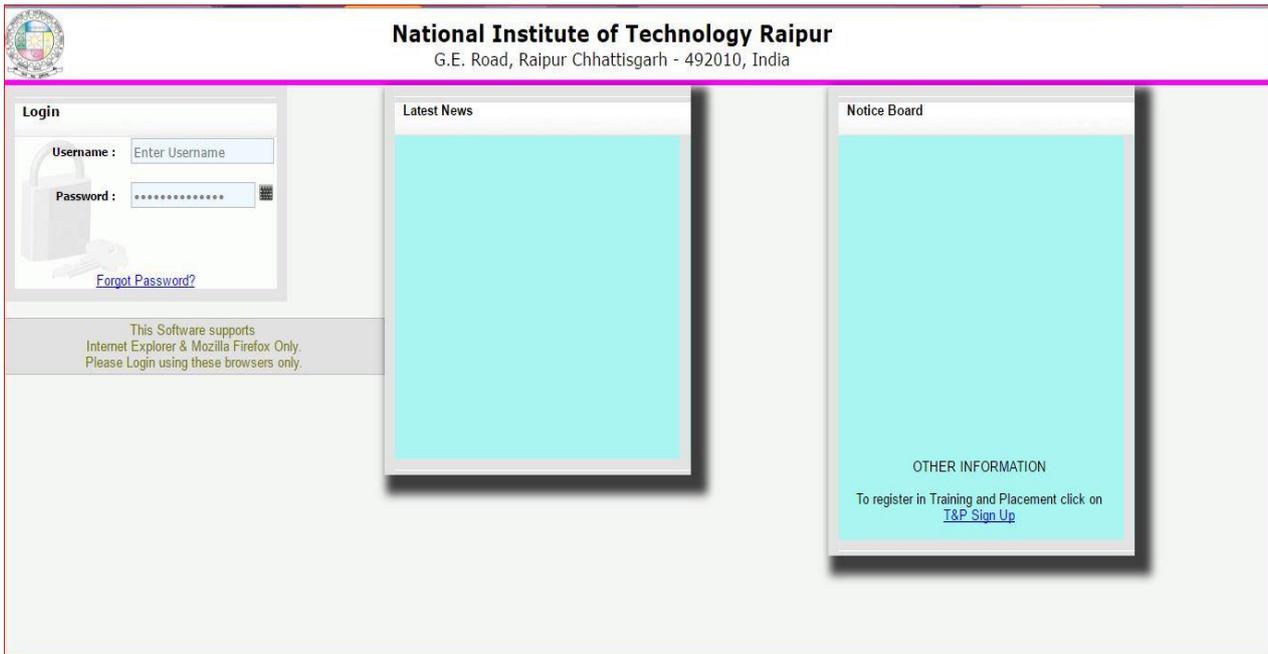
The programmes which are going to be successfully completed during the project period with the participating institutions may be continued even after completion of the project depending on the mutual agreement.

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

Proposed IDP is prepared based on the inputs(feedbacks/suggestions) received time to time from the stake holders.

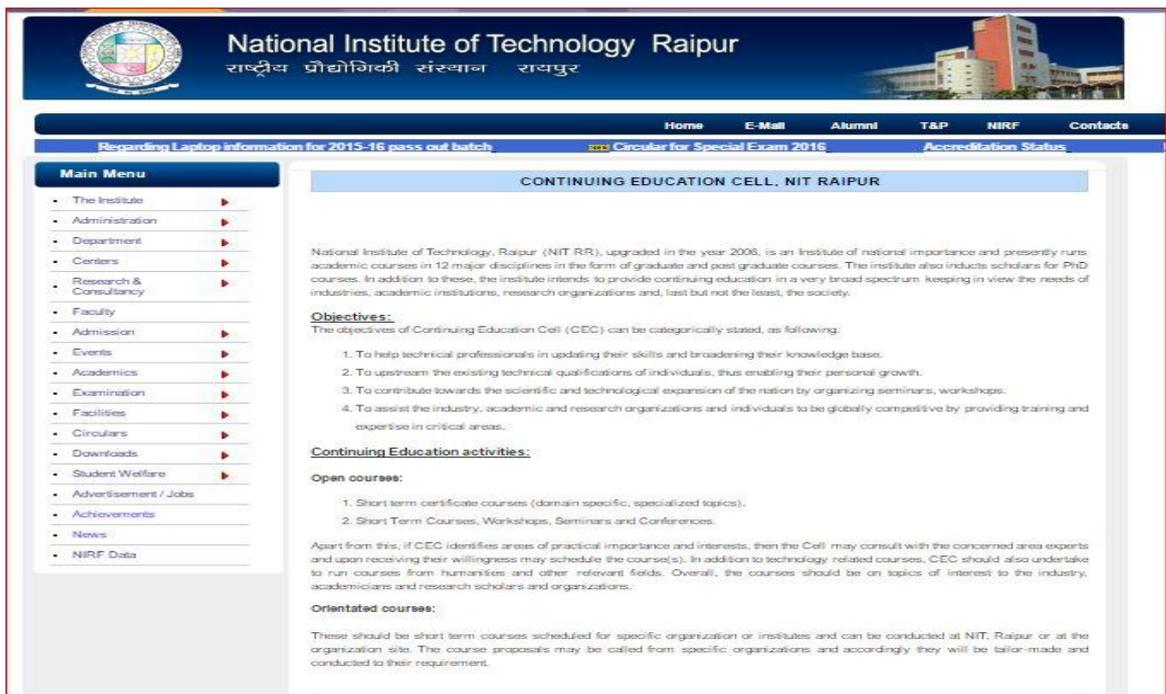
Annexure -1

MIS screen shot of NIT Raipur



Annexure 2

Continuing Education Centre of NIT Raipur



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