Institutional Developmental Plan

Kolhan University, Chaibasa

कोल्हान विश्वविद्यालय, चाईबासा

Submitted to

Rashtriya Uchchatar Shiksha Abhiyan
Govt. Of Jharkhand

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Kolhan University, Chaibasa

The Kolhan University is a State University established in the year 2009. The University is registered under section 2(f) of the UGC Act 1956. The University is NAAC accredited. The university Head Quarter is situated in Chaibasa. Its territorial jurisdiction extends over three districts of the Kolhan Cornmissionary namely West Singhbhumand Seraikela- Kharsawan districts.

Vision of the University

Kolhan University envisages to awaken and sharpen the intelligence and the philanthropic spirit in the students so that they able to meet an increasingly complex world. The cultivation of a global outlook, a love of nature and concern for mankind is integral to its educational aims.

The empowerment of youth through knowledge, skills and values for inclusive growth and sustainable development of society is enshrined in its vision and mission statements, and the university is committed to pursuing it. Kolhan Univrsity seeks to establish itself as a centre of excellence and seat of intense and applied research with social relevance and commitment through integration of scientific and technological knowledge and skills with the basic human needs, ethos and values. Kolhan auaniversity endeavours to set new benchmark in teaching, and extension for creation of social and human assets, so that the students are endowed with requisite skill and knowledge imbibed with values, aptitude and responsiveness towards society, the country and the world at large.

The Kolhan University envisions to make a transformative impact on society through continual innovation in education, research, creativity and entrepreneurship.

1. INSTITUTIONAL BASIC INFORMATION

(i) **Institutional Identity :**

(i) Name of the Institution : Kolhan University, Chaibasa

(ii) Is the Institution approved by regulatory body : Yes

(i) Furnish Approved No. :

(ii) Type of Institution : Govt. funded

(a) Status of Institution : Constituent Institution.

(b) Name of Head of Institution and Project Nodal Officers.

Head and Nodal Officer	**Name**	**Phone**	**Mobile No.**	**Fax Number**	**E-mail Address**
Head of the Institution (full time appointee)	Prof. Dr. Shukla Mahanty				
RUSA Institutional Co-ordinator	Prof. A.K. Upadhyay		9934510190		akupadhyay558@rediffmail.com
Nodal Officer for					
Academic Activities	Dr.R.S.Dayal		8809069060		
Civil work including Environment Management	Sri M.K.Mishra		7281917235		
Procurement	Dr.A.K.Jha		9006056324		kuproctor@gmail.com
Financial aspects	Sri Sudhansu kumar		9431353131		
Equity/Assurance Plan Implementation	Dr.S.P.Mandal				

(ii) **Academic Information :**

PG/Ph.D programs offered in Academic year 2018-19

Sl. No.	Title of Programs		Level (PG, Ph.D.)	Duration (Years)	Year of starting	Sanctioned annual Intake	Total student strength
1	Masters	Physics	PG	2 Years	2009		
		Chemistry	PG	2 Years	2009		
		Maths	PG	2 Years	2009		

		Botany	PG	2 Years	2009		
		Zoology	PG	2 Years	2009		
		Geology	PG	2 Years	2009		
		English	PG	2 Years	2009		
		Hindi	PG	2 Years	2009		
		TRL	PG	2 Years	2009		
		Sanskrit	PG	2 Years	2009		
		Urdu	PG	2 Years	2009		
		Oriya	PG	2 Years	2009		
		Bangla	PG	2 Years	2009		
		History	PG	2 Years	2009		
		Pol. Science	PG	2 Years	2009		
		Economics	PG	2 Years	2009		
		Philosophy	PG	2 Years	2009		
		Psychology	PG	2 Years	2009		
		Sociology	PG	2 Years	2009		
		Anthropology	PG	2 Years	2009		
		Home Science	PG	2 Years	2009		
		Geography	PG	2 Years	2009		
		Commerce	PG	2 Years	2009		
2	Doctoral	Physics	Ph.D	3 years	2009		
		Chemistry	Ph.D	3 years	2009		
		Maths	Ph.D	3 years	2009		
		Botany	Ph.D	3 years	2009		
		Zoology	Ph.D	3 years	2009		
		Geology	Ph.D	3 years	2009		
		English	Ph.D	3 years	2009		
		Hindi	Ph.D	3 years	2009		
		TRL	Ph.D	3 years	2009		
		Sanskrit	Ph.D	3 years	2009		
		Urdu	Ph.D	3 years	2009		
		Oriya	Ph.D	3 years	2009		
		Bangla	Ph.D	3 years	2009		
		History	Ph.D	3 years	2009		
		Pol. Science	Ph.D	3 years	2009		
		Economics	Ph.D	3 years	2009		
		Philosophy	Ph.D	3 years	2009		
		Psychology	Ph.D	3 years	2009		
		Sociology	Ph.D	3 years	2009		
		Anthropology	Ph.D	3 years	2009		
		Home Science	Ph.D	3 years	2009		
		Geography	Ph.D	3 years	2009		
		Commerce	Ph.D	3 years	2009		

(c) Whether Institution is Accredited?
(d) Grade "C"

(e) When 2015

(f) Accreditation Status of PG programs :

Title of PG Programs being offered	Whether eligible for accreditation or not ?	Whether accredited as on 31st March 2015 ?	Whether Applied for as on 31st March 2015?
Masters	Yes	Accredited, Yes	No

1.3 Faculty Status (Regular /on Contract Faculty as on March 31st, 2019)

Faculty Rank	No. of sanctioned Regular Posts	Present Status : Number in Position by Highest Qualification												Total No. Of regular faculty in Position	Total Vacancies	Total No. of contract faculty in Position
		Doctoral Degree				Masters Degree				Bachelor Degree						
		Engineering Disciplines		Other Disciplines		Engineering Disciplines		Other Disciplines		Engineering Disciplines		Other Disciplines				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15= (3+5+7 +9+11 +13)	16= (2-15)	17= (4+6 +8+ 10+ 12+ 14)
Prof.	23															
Asso. Prof.	46															
Asst. Prof.	69															
Total	138															

1.4. Baseline Data (all data given for the following parameters to All disciplines)

Sl. No.	Parameters	
1.	Total strength of students in all programs and all years of study in the	2594

	year 2018-19.	
2.	Total women students in all programs and all years of study in the year 2018-19	1911
3.	Total SC students in all programs and all years of study in the year 2018-19	29
4.	Total ST students in all programs and all years of study in the year 2018-19	1622
5.	Total OBC students in all programs and all years of study in the year 2018-19	637
6.	Number of fully functional p-4 and above level computers available for students in the year 2018-19	
7.	Total number of text books and reference books available in library for UG and PG students in the year 2018-19.	
Students teacher ratio		
8.	% of UG students placed through campus interviews in the year 2018-19.	
9.	% of PG students placed through campus interviews in the year 2018-19.	
10.	% of high quality undergraduates (>75% marks) passed out in the year 2018-19.	77 out of14858
11.	% of high quality postgraduates (>75% marks) passed out in the year 2018-19.	20 out of 3625
12.	Number of research publications in Indian refereed journals in the year 2018-19.	47
13.	Number of research publications in international refereed journals in the year 2018-19.	11
14.	Number of patents obtained in the year 2018-19.	NIL
15.	Number of patents field in the year 2018-19.	NIL
16.	Number of sponsored research projects completed in the year 2018-19.	01
17.	The transition rate of students in percentage from 1st year to 2nd year in the year 2018-19 for: (i)all students (ii)SC (iii)ST (iv)OBC	i)-All stu-11,555 ii)SC-165 iii)ST- 5889 iv)OBC-5501
18.	IRG from students fee and other charges in the year 2018-19 (Rs. in Crores)	`
19.	IRG from externally funded R & D projects consultancies in the year 2018-19 (Rs. In Crores)	NA
20.	Total IRG in the year 2018-19(Rs. in Crores)	1,51,06,634
21.	Total annual recurring expenditure of the institution in the year 2018-19 (Rs. in Crores)	

2. Institutional Development Proposal (IDP)

2.1 Executive Summary of IDP **

Access to Higher Education in Kolhan

Institutional Development Plan (IDP), Kolhan University has proposed innovative M.A.,/ M. Com./ M.Sc. prorammes in order to visibly enhance the accessibility to higher education in Kolhan. There are also proposals meant to improve the infrastructural facilities to pave the way for substantially increasing the students‟ enrollment.

E**quity Perspective**

In our country wide disparity in Higher Education is visible across geographical regions, often due to gender discrimination, socio-economic deprivation and socio-religious preoccupations among diverse groups. This has prevented the much-needed trickling down of the fruits of higher education to the deprived and marginal sections of society. Kolhan University and its constituent and affiliated colleges are spread over three districts. Kolhan is a state where rural urban divide seems to exist in overall economic development. The educational institutions are unevenly spread between rural and urban areas. The primary concern of the University is to bring the students from rural areas into the University system for availing of the opportunities of post graduate education and empower them. Hence, it is a major challenge for the University to create an environment conducive to the education of rural students.

Apparently, the GER of SC, ST and OBC in Kolhan University is very high. GER of ST is one of the highest in the country. GER of ST population is around 68% percent as per the NSSO 66thround estimation. Kolhan University has made much progress in inclusive higher education. However, things are not very rosy with regard to the enrollment of SC, ST and OBC students at the Kolhan, but to finds qualified candidates for various academic posts reserved for SC, ST and OBC. What is important is to provide access to higher education to SC, ST and OBC categories which would empower them and provide them employment. Otherwise expected results of demographic growth will not come forth. To achieve the same, increasing the enrollment of SC, ST and OBC at the post graduate level as well as at M.Phil, Ph.D is of great significance.

Enrollment of women, in higher education in Jharkhand, is very high and has been showing an increasing trend in the recent years. More than 80 percent of students at Kolhan University are women. However, the same trend is not visible in the employment scenario. Even in faculty recruitment, the share of women is low. The employability of women has been found to be much

less as compared to men. This is a matter for serious concern. Unless the higher enrollment of women in higher education is translated into higher employment and income prospects, higher education may not succeed in bringing the much needed economic change aligned to gender parity.

The IDP of Kolhan University has placed a special emphasis on the equity front. The IDP proposes for scholarship schemes for SC/ST/OBC, Differently-abled students, besides NET/SET coaching, remedial classes, etc. A proposal on new teaching methodology and pedagogy to encourage marginalized students is also included in the IDP.

Excellence in Higher Education (Done)

Not a single higher education institution in India figures in the first 200 top-ranked institutions in the world. The Honorable President and Prime Minister of India have emphasized time and again, the need for improving the standards of higher education in our country. Excellence is a prime aim of the XIIth plan strategy. There are many parameters one would look at in evaluating the excellence of an educational institution. Employability and employer-satisfaction could be considered as a measuring rod of academic excellence. Though the Kolhan University pass out students in general find jobs, there are indications that the salary paid to them does not commensurate with the qualification. It implies that their ability to perform certain tasks does not commensurate with their qualifications. Improving the quality of higher education is another major challenge for Kolhan University and its affiliated colleges. The number of candidates qualifying in national level examinations is also relatively low.

Low Student-Teacher ratio can contribute a lot in improving the standard of higher education institutions. Jharkhand has one of the lowest Student-Teacher ratios as compared to other states. Nevertheless, it is not reflected in students‟ performance. It reveals that low student teacher ratio by itself may not lead to better excellence. It is only a necessary condition and not a sufficient condition for better performance and excellence. What is needed along with low student teacher ratio is the basic infrastructure and other amenities. Though the low student teacher ratio is an opportunity for Kolhan University, providing of world class infrastructure seems to be a challenge.

It is widely accepted and sometimes advocated that research and teaching go side by side. Academic excellence to a large extent depends on the research output of faculty and students. The record of publications of different departments shows that the university faculty has the capability to publish in renowned journals. There is need to allocate more funds to improve the research infrastructure in terms of modern equipments, computers, journal subscriptions, lab facilities. Moreover, faculty members need to be encouraged to conduct research through motivation and proper incentive mechanism.

The IDP has included proposals which would certainly enhance the excellence provided it is sanctioned and implemented. Proposals on new programmes, infrastructural development through expansion of lab space, modern equipments, scholarship schemes for Ph.D students, faculty development programmes, etc, are expected to enhance the excellence in higher education.

Administrative and Institutional Reforms

To achieve access, equity and excellence, there is urgent need for more reforms in the administrative process and institutional process. University administration must be freed from bureaucratic hurdles. The need of the hour is academic and financial autonomy in the functioning of University. A technology based administrative reform is urgently needed to improve efficiency in university administration. A proposal to modernize computer networking for administrative efficiency is included in the IDP

2.2 **Details of SWOT Analysis**

The Data for the SWOT analysis has been collected from various departments of Kolhan University. The Kolhan University has recently submitted its NAAC self study report and huge data has been collected from the departments on various academic and non-academic aspects. The data available is classified into various categories, namely, faculty, students, infrastructure, etc. Various ratios, for example, ratio of vacant positions to total sanctioned strength, ratio of temporary teachers to permanent teachers, etc. have been worked out to identify the strength and weakness of Kolhan University. Information on years of experience, number of Ph.Ds guided, number of publications, range of impact factor, h index, etc. have been used as indicators to assess the strength of the University. The data on faculty with projects, faculty in national and international committees, editorial boards, etc. provided the information on visibility of the faculty at national and international level.

The information collected on student teacher ratio, the number of students passed NET/SET examinations, staff and student diversity, extension activities, „beyond syllabus participation‟ of the students, etc. provided much needed input to arrive at strength, weakness and opportunities.

The discussion with Deans, Heads of the Departments and with individual faculty members, helped the Planning Team to understand the strength and weakness of the University. Planning Team also had a brain storming session on various qualitative aspects of SWOT analysis. However, the Planning Team has depended more on available data, its analysis and interpretation.

The inference are drawn based on data analysis and discussion. Wherever necessary, simple statistical tools were used to draw the inferencesAll the stakeholders of the institution [constituting the teaching and non-teaching staff along with student class representatives and some parents] over a period of time have discussed various issues pertaining to the University. The core committee headed by IQAC committee and the stakeholders have arrived at the following SWOT analysis. The present methodology included and analysed the following components

- Information and data –Academic and Administrative
- Student opinions in the form of feed back
- Parents Teachers Meeting feedback
- Brainstorming by faculty
- Non-teaching staffs feedback
- All other stakeholders' (Students, Guardian, Industry representative etc) opinion

2.2.2 Strengths of the University

S1: Government Support

Kolhan University is the only co-education University in the Kolhan region of Jharkhand and the government has been always supporting the university.

S2: Conducive academic environment

Very high life expectancy, social and religious harmony, peace loving people, disciplined student population, growth of service sector, tourism based economy etc. create a very good academic environment for the Kolhan University to prosper.

S3: Advantageous Location

- This University is situated in the India's most Industrial & mineral rich area.
- Its situated adjacent to Asia's thickest / dense forest area called Saranda Forest.
- Close to two neighboring states Odisha & West Bengal.

S4: Tribal Population

The University is situated in the region of state where around 68 % population are a tribal & of poor society. Here to provide social justice is a bit challenging.

S5: Linguistic Advantage

Kolhan is situated at the junction of three states: Jharkhand, West Bengal & Odisha.

S6: Highly qualified academic staff

Majority of the faculty members are with Ph.D. The faculty members are drawn from nationally and internationally recognized Indian institutions like IITs, JNU, University of Hyderabad and other important central and state universities.

S6: High research potential of the faculty

Many of the faculty members particularly in science disciplines have high impact factor publications. Faculty members in science have publications with h index. Faulty members are also involed in various collaborative projects.

S7: Young University

Average age of faculty members is close to 45. Young and enterprising faculty members can bring dynamic changes in the higher education scenario in Kolhan provided adequate support and incentives are given.

S7: Choice Based Credit System(CBSC)

University recently has introduced choice based credit system at the Master Level in all its teaching departments. It provides lot of flexibility in the selection of courses across disciplines and can be an impetus to excellence. The semester system with 100% internal evaluation, compulsory project at PG level, autonomy in curriculum design and transparent method of performance appraisal for teachers make CBSC at the Kolhan University a unique one.

S8: Excellent Library and e-learning resources

The library of the Kolhan University is spacious and has a good collection of resources including e-learning. Library has very good holding of books and subscribes number of reputed National and International journals. Besides, the library also subscribe to UGC Inflibnet and other data bases.

Institutional Weakness

Weaknesses:

W1: Inadequate Infrastructure

Infrastructure in terms of class rooms, big lecture halls, hostels, canteen facilities etc. is inadequate.

W2: Inadequate Faculty strength

Almost percent of total sanctioned positions remain vacant or are filled with contract teachers. It has not only affected teaching but also the research activity.

W3: Administrative Bottlenecks

Delay in processing of files, delay in decision making mainly due to the shortage of supporting staff and technical staff.

W4: Less Industry-academic Interaction

The scope for industry-academic interaction is limited as there are not many large scale industries. This also has lead to the problem of decreased campus placement of students.

W5: Less Sports Infrastructure

The sports infrastructure at the Kolhan University is not up to expected level. University does not have a well developed cricket ground, hockey ground, volley ball court, tennis court etc.

W5: Lack of funds for research

No sufficient start up grant for new faculty to kick start his/her research. Lack of funds for travel support (national and international) for attending conferences. No institutional mechanism, infrastructure and facilities for attracting international students.

Institutional Opportunity

O1: Employment Opportunity

Since Kolhan has a dominant Industrial & Mining sector. There is huge employment & self employment opportunity for commerce, management and computer based post graduates.

O2: Opportunity to Attract Good faculty

Kolhan University can attract highly qualified faculty from the leading institutions in India.

O3: Opportunity to get a spacious campus.

O4: To get better accreditation in NAAC

O5: To get better NIRF ranking

O6: Attract large number of students from nearby states.

The college is situated in the border of three states (Jharkhand, Odisha & West Bengal).

O7: Initiate better Industry-academia partnership

O8: Environmental Science Research

- This University is situated in the India's most Industrial & mineral rich area.
- Its situated adjacent to Asia's thickest / dense forest area called Saranda Forest.
- Since the university is situated near the Uranium (radio-active material)

O9: Eastern Indian language

The location of the university is at the junction of Odisa, West Bengal & Jharkhand.

O10: Indigenous & tribal studies (around 68 % population are tribes).

O11: Research & Developments

O12: Industrial Consultancy

O13: Incubation Centre

O14: Academic Collaboration & MoU

The University is situated in close proximity of CSIR-NML, IIT Kharagpur, NIT Jamshedpur, NIT Durgapur, CFRI, NIT Raurkela, SKB University, Purulia, Bankura University as well as very good train connectivity from Kolcata.

Threat:

T1: Slowdown of the economy

T2: Difficulty in finding suitable candidates as faculty members

T3: Mushrooming of private institutions with false promises

Many private institutions are coming up with many promises. Students maybe lured to these institutions expecting quick returns and University may lose good students.

T4: Timely delivery of Policy initiatives

The formulation and announcement of Govt. Policies on issues of prime importance always get delayed. For example, industrial policy, Investment policy, etc. don‟t come in time. It affects the employability of the graduates.

T5: Failure to attract scholars for full time research

At the moment, majority of research scholars are part time researchers. University could not attract full time research scholars in big numbers to provide a boost to fundamental/cutting edge research. This affects the research output and quality of publications.

T6: Low placement

Although the university is situated in the one of the India’s richest industrial area as well as mining area. But the we have to enhance the necessary skill & training for proper placement.

T9: Not listed in UGC 12b because of the lack of appointments of faculty members in the PG Departments

Based on SWOT analysis, the “Strategic Plan” developed for

institutional development.

Kolhan University‟s strategy for the remaining plan period rests on the guiding principles, namely, access, equity and excellence.

Strategic Plan Towards Enhanced Access to Higher Education

The strategy of Kolhan University is to increase student intake not only by introducing new courses and programmes but also by expanding the existing programmes through investment in infrastructthural facilities and other basic requirements

The strategic plan lays emphasis on:

(i) Strong emphasis on Research & Development

In the modern era any university can not get any descent ranking nirf/QS without focus on research, development & innovation. Therefore we are proposing the establishment of the center of excellence named “Nanotechnology Center for Energy and Environment” in the physics department. This will also work as the central instrumentation facility of the university & will further boost the research activities in all the science subjects.

(ii) Expanding classroom and lab space

The existing space is not sufficient for introducing new and relevant courses and programmes and to expand the existing programmes. To introduce interdisciplinary and multidisciplinary programmes, we require class rooms of large size. It also necessitates more lab space, space for ladies room, gents common room,etc.

(iii) Expanding hostel facilities

If we have to attract more number of students from remote places of the State and also from other places, the hostel facilities must be enhanced.

(iv) Recruitment of more faculty

(v) Expanding ICT facilities in each department.

(vi) Expanding computer facilities, provision of teaching aids, audiovisual facilities.

Enhancing access to quality higher education means providing opportunity in terms of higher access to computer facilities, teaching and audiovisual aids. The existing

facilities in the computer labs have to be increased. The class rooms are to be equipped with modern amenities/equipments to facilitate teaching learning process.

(vii) Strengthen the employbality of students by establishing "**Career Planning & Placement Division with Incubation Center**".

(viii) Research fellowship for full time students.

To create a research culture in the University, more number of fulltime research workers are needed and quality could be attracted only through liberal incentives in the form of decent research fellowships to aspiring candidates.

Strategic Plan Towards More Equity

A well researched strategy to bring down disparity across geographical regions, gender and socio-economic and socio-religious groups is of utmost significance in overall development of higher education. The ideal strategy is to provide required facilities to the above groups in terms of physical infrastructure, financial support and special learning opportunities. In order to ensure equity the strategic plan lays emphasis on:

(i) Girls hostels with enhanced capacity.

(ii) Common rooms and other facilities for girl students.

(iii) New academic courses / programmes on

(I) Environmental Science (ii) material science / nanoscience

(iv) Design new learning processes / pedagogy etc which help the weaker students.

(v) Transport facility specially for SC, ST and OBC students.

(vi) Special coaching for NET/SET exam as well as Civil Services examinations for SC, ST and OBCc.

(vii) Hostel mess subsidy to students from economically weaker sections and socially deprived class.

Strategic Plan Towards enhancing Excellence in Higher Education

In the long run, excellence can be made possible/achieved through enrichment of competent faculty. Excellent faculty leads to excellent students and yield overall academic excellence. In Kolhan, since GER is relatively high, and the State is placed in a relatively better position with regard to access and equity, we can afford to give more emphasis on quality. The strategy should be to incentivize the existing faculty and students to undertake quality research along with the upgradation of infrastructure as mentioned earlier. The following steps are aimed in thisdirection:

(i) Provision of seed money / research grants for the faculty to undertake research.

(ii) Provision of funds for presentation of research papers in National/ International conferences and gatherings.

(iii) Grants for publication of books, submission of papers in journals, filing patent applications etc.

(iv) Research fellowship for full time Ph.D students.

(v) Expansion of Visiting Professorship Scheme.

2.2.2 How the key activities proposed in the Institution Development Proposal are linked with the results of SWOT Analysis.

The activities under Institutional Development Plan are mainly categorized into four types.

(i) Infrastructural Development

(ii) Faculty Support and Development

(iii) New Courses and Programmes

(iv) Research, Development and Innovation.

Sl No.	Proposals	Link with SWOT Analysis
1	Infrastructural Development	One of the major weaknesses of Kolhan University as per the SWOT analysis the infrastructure constraint in terms of classroom space, lab space,central

		instrumentation space
		facility, library space, common room space, recreational space, equipment, computers, etc. Kolhan university has enormous strength to increase the access, equity and excellence in higher education provided adequate infrastructure is available.
2	Faculty Support	Another major weakness of the Kolhan University is that all faculty positions are not filled. It is very unlikely that University will be able to fill all the vacant positions soon. Faculty support in terms of new recruitment could go a long way in enhancing the teaching and research output of the University. Besides, support to existing faculty is also proposed in the plan to extract full potential from them
3	New Courses and Programmes	New add-on, vocational & better industry interfacing courses are to be designed as well the existing syllabus should be updated according the the change in society & industries.
4	Research, Development and Innovation	Major strength of the University is the highly qualified faculty members with high research potential. The Plan contains proposals on innovative and research centric programmes, which would utilize this potential.

2.3 **Objectives and Expected Results**

The specific objectives of the Plan include increasing employability of graduates, increased learning outcomes of the students, improving interaction with industry, enhancement of research and consultancy services, etc.

(g) Action Plan for Improving Employability of graduates.

According to National Knowledge commission report headed by Sam Petroda "One of the 10 Engineering Graduates are employable" & "One of the 25 general Graduates are employable". That too on the basis of survey conducted in to 100 Universities / Institutions. Thus the major challenge is to make the students employable. Therefore we have gone through rigorous introspection about our Kolhan university.

The all such the universities, the major challenge is to make the students employable.

The root cause of such pathetic situation is the lack of elementary soft skill and analytical skills. In USA they conduct 'Scholastic Aptitude Test (SAT)' before admitting to the UG courses and 'Graduate Record Examination (GRE)' before MS/PG courses. But here In India we do not have any such test. Therefore most of the students do not posses such skills.

Solution: The solution is to provide soft skills and analytical skills training to each and every students of the university and ensure its implementation, along with the academic examination. These skills are following:

- Competitive English
- Quantitative Aptitude
- Analytical Skills
- General Studies/Awareness

Besides, this subject related interface vocational & add-on course should be started along with course, so that the the pass out students may get employment opportunity as well as can initiate their own venture through incubation centre.

Therefore we are proposing the establishment of "**Career Planning, Placement Division And Incubation Centre ”** at the University head quarter**.**

(h) Increased Learning Outcomes of the Students

The proposal is also aimed at improving the learning outcomes of the graduates. Many Science Departments have proposed to increase lab space and the purchase of new equipments/ instruments. This is going to provide the graduates more practical knowledge based on experimentation and better learning outcomes. The new courses proposed in the IDP are mostly applied courses that has industrial application and is expected to improve the learning outcomes. The proposal from the Sociology Department and Computer Science Department on digital story telling is a new experiment to improve the learning outcomes.

c) Obtaining Autonomous Institution Status within 2 years - NA

d) NA

(e) Implementation of Academic and Non- academic Reforms

Kolhan University has decentralized its administrative responsibilities in order to initiate reforms and delegated administrative powers/authority to the level of Faculty Deans and the Heads of the Departments. The Department Council at the Department level is a basic decision making unit and most of the academic decisions pertaining to day to day functions are taken at this level. Heads of Departments are also entrusted with limited financial powers to enable them to take timely decisions /fulfill department requirements. Kolhan University is far ahead of other State Universities with regard to examination reforms. Kolhan University has introduced a fully internal assessment system and is able to complete the assessment and announce the marks /show the assessed answer papers to the students within three days of completion of final examination. Kolhan University also follows continuous evaluation system as part of its Choice Based Credit System. University will try to strengthen all the good academic and administrative practices existing at the moment and thrive to add few more in the days to come. This IDP proposed an integrated management system by the computer center that would help speedy processing of files/administrative matters.

(f) **Improving Interaction with Industry**.

The IDP contains proposals on programmes which require direct interaction with the industry. The proposals from for up gradation of the exiting research & development infrastructures will certainly improve the University- Industry interaction. Sophisticated equipments / state-of the – art laboratory facility / quality driven Faculty proposed under this IDP is likely to attract industry personnel into the campus for various types of technical assistance. Campus development programmes like rainwater harvesting will enhance the scope for consultancy from the industry to start similar projects.

(g) **Enhancement of Research and Consultancy Services**

In general, the proposals are aimed at up gradation of lab, equipment, student and faculty resource etc, and consequently, these facilities/steps are going to bring more research projects and consultancy services. Majority Faculty members from science disciplines already have good track record of undertaking research projects and consultancy assignments. The IDP once implemented will make rapid progress in research and consultancy services.

2.3.1 How the key activities proposed in the Institution Development Proposal are linked with the results of SWOT Analysis.

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Sl No.	Proposals	Link with SWOT Analysis
1	Infrastructural Development	One of the major weaknesses of Kolhan University as per the SWOT analysis the infrastructure constraint in terms of classroom space, labspace, central instrumentation space facility, library space, common room space, recreational space, equipment, computers, etc. Kolhan university has enormous strength to increase the access, equity and excellence in higher education provided adequate infrastructure is available.
2	Faculty Support	Another major weakness of the Kolhan University is that all faculty positions are not filled. It is very unlikely that University will be able to fill all the vacant positions soon. Faculty support in terms of new recruitment could go a long way in enhancing the teaching and research output of the University. Besides, support to existing faculty is also proposed in the plan to extract full potential from them

3	New Courses and Programmes	Major strength of the University is the low student teacher ratio. Along with plans for expanding existing programmes and courses, new programmes and courses have been proposed in the plan to provide more access and equity. University plans for a 25% increase in studentsintakebytheendofthe12thplanand50% increase by the end of the 13thPlan.
4	Research, Development and Innovation	Major strength of the University is the highly qualified faculty members with high research potential. The Plan contains proposals on innovative and research centric programmes, which would utilize this potential.

2.4 **Provide action plan for organizing a finishing school and for improving the academic performance of SC/ST/OBC and academically weak students.**

An innovative scheme of***"Adopt an SC//ST/OBC Student"*** will be introduced in this plan period on an experimental basis. Under this scheme the faculty members of the respective departments will adopt academically at least one SC/ST/OBC student and monitor their academic performance and help them to overcome their difficulties.

Special Coaching for NET/SET Examination: Qualifying in NET/SET examination has become a difficult task for the students. Employability of SC/ST/OBC students in the academic institutions depends on whether they pass NET or SET Examination. There are many teaching positions in the colleges and in the University remaining vacant at various levels for want of qualified candidates from the reserved category. We plan for special NET/SET coaching for SC/ST/OBC/differently abled Physically Handicapped students twice in a year.

2.5 **Provide an action plan for strengthening of PG Programmes and starting of new PG programmes.**

The IDP proposals give details on strengthening of existing PG programmes and starting of new PG programmes.

2.6 **Attach a summary of Training Needs Analysis carried out. Also, provide Faculty development Plan for the first 18 months for improving their teaching, subject area and research competence based on Training Needs Analysis.**

On an average, Kolhan University has about 6* faculty members per department. The number of Departments/Centres on Campus is about 23. As such, the approximate number of Faculty works out to 115. Thus the ratio of Professor: Associate Professor: Assistant Professor works out to 1:2:3.

However each departments are having only one or at max two faculty members at present.

The training need analysis was carried out using the information from (I) Feed-back forms of Faculty (ii) Self Evaluation Reports of Individual Departments (iii) Data Available with IQAC (iii) Data Published in the Annual Reports of the University (iv) Self- Appraisal Forms of the Individual faculty. The criteria used to assess the basic and advanced Pedagogy included

(I) subject knowledge

(ii) teaching efficacy

(iii) Soft skills

(iv) approachability

(iv) class room monitoring.

Specific action visualized by the University for enhancement of Pedagogic competence, domain knowledge enhancement, faculty qualifications, research capabilities, etc, are

(i) A Compulsory Refresher Course within 2 years of joining

(ii) Summer Schools of approx. 3 weeks duration

(iii) Short Term Advance Training Courses (subject specific)

(iv) Short Term Need-based courses in new/developing areas

(v) Incentivizing Quality publications

(vi) Encouraging Faculty-conducted programmes/conferences/workshops

(vii) Encourage comfort-level with the use of ICT

(viii) Provide on-line pedagogical competence to the willing faculty

(ix) Enhancing grants for purchase of books/subscription of periodicals

(x) Speedy processing of Faculty Improvement Programme (FIP) proposals

(xi) Extending the Study-Leave facility to a larger percentage of the faculty

(xii) Granting fellowships for short-term visits/research proportionately across Faculties

(xiii) Encourage faculty to undertake Post-doctoral research

(x i v) Encouraging inter-institutional collaborative research ventures

(xv) Motivating faculty to undertake research projects from funding agencies.

FACULTY DEVELOPMENT/TRAINING PLAN FOR 1ST18 MONTHS

Month	Program	Topic
0-5 month	One-Week Training Program	on IT-Skill, open and e-learing, Swayam at the Campus
6-10	One-Week Training Program	Faculty wise workshop on plagiarism
11-15	One-Week Training Program	Recent trends in writing project proposal & research papers & funding agencies
15-18	One-Week Training Program	Faculty wise workshop on “Recent advances in the Academia-Industrial

		interface & Consultancy"
0-18	Faculty wise	Weekly Seminar

2.7 **Action Plan for Technical and other Staff in Functional Areas.**

I. Training/Refresher Courses/Workshops for Administrative/Non-teaching Staff.
Training for the purpose of enhancing efficiency and output, public relations / interaction, work code and ethics, aiming at developing overall professionalism.

The above training programme will be undertaken during the plan period.

II. Workshop on Online Administration (paper less work)

III. Workshop on new paradigm of Human resource managements

IV. Workshop on new paradigm of Financial managements

V. Training on accountable & sustainable administration.

2.8 **Describe the relevance and Coherence of Institutional Development Proposal with State's/National Industrial / Economic Development Plan.**

The Institutional Development Plan has been prepared keeping in mind the Industrial Policy/ Economic Policy of Kolhan Government. The Kolhan Government has always encouraged service-sector-oriented growth strategy for the economic development of the State. The State Government has also taken initiative towards industrial development. The contribution of Industrial sector to Kolhan‟s economy is close to 30%. As such, the Institutional Development Proposal of Kolhan University is intended to increase the employability of the graduates both in the Service sector and Industrial sector. The programmes proposed by the various Departments are such as would meet the Human Resource (HR) requirements of both the Service as well as the Industrial sectors of Kolhan‟s Economy.

2.9 **Describe briefly the participation of departments/faculty in the IDP Preparation**.
For preparing the IDP of the university, a committee has been constituted by the order of Honorable vice-chancellor of the university, which comprises following members:

1. Dr. T. C. K. Raman
2. Dr. R. S. Dayal
3. Dr. R K Karn
4. Sanjay Kumar Sinha

5. RUSA Nodal Officers

For the anticipating & simulating the future plan of the university and prepare the road map, the IQAC Cell has organized various brain-storming sessions with different stakeholders of the university viz. Faculties, Students, BOGs, Industrial representatives and guardians. Further a general body meeting has been organized which includes all the faculty members of the university from each department. They have participated & played the pro-active role in preparing the roadmap for the university.

Simultaneously, a meeting with all the officers, and staffs have been also been conducted and all the positive suggestions & idea's have been discussed and included in the IDP.

Finally the draft IDP has been submitted to the honorable Vice-Chancellor for further open-discussion & approval from different committees, before sending to the RUSA, Govt. of Jharkhand.

2.11. Describe the institutional project implementation arrangements with participation of faculty and staff.

University has already constituted a Project Monitoring Committee to monitor the Institutional Project at the implementation level under the chairmanship of Hon. Vice-chancellor as per the recommendation of RUSA involving faculty members, administrative officers, student representatives etc. University will be also constituting additional committees like the

- Infrastructure Committee,
- R &D Committee,
- Academic Support Committee,
- Faculty Development Committee,
- Institutional Reforms Committee, etc, to monitor the Project at the implementation levels specific to the areas of RUSA funding.

2.12 Institutional Project Budget.

The summary of the aggregate Budget figures of all the proposals from all the Departments concerned are presented in the Tables below in two formats: (i) Component-wise for the 6 components; and, (ii) Year-wise for 2014-15, 2015-16 and 2016-17.

Institutional Budget Table 2.12:

Component-wise (Summary of Table 2.12 of **RUSA**)

S.No	Activities	Projected Allocation (in lacs)	Financial Year				
			2019-20	2020-21	2021-2022	2022-23	2023-24
1.	Infrastructure (25%)	**500**					
	1. Modernization and strengthening of laboratories						
	2. Establishment of new laboratories for existing UG and PG programs and for new PG programs (Separate Building Physics Department & Centre for Nanotechnology for Energy & Environment)	450					
	3. Modernization of classrooms						
	4. Up gradation of Learning Resources						
	5. Procurement of furniture						
	6. Establishment / Up gradation of Central and Departmental Computer Centers	50	50				
	7. Modernization / improvements of supporting departments	00	5	5	5	5	5
	8. Modernization and strengthening of libraries and increasing access to knowledge resources		50				
	9. Refurbishment (Minor Civil Works)		10	10	10	10	
2.	Research and development support	**800**					

	Providing Teaching and Research Assistant ships to increase enrollment in existing and new PG programmes in Engineering disciplines (M. Tech. Natotechnology)	200					
	Provision of resources for research support	200	20	20	20	20	20
	Enhancement of R&D and institutional consultancy activities (Support for attending Conferences / workshop as per MHRD norms)	400					
3.	Faculty Development Support	**100**					
	Faculty and Staff Development (including faculty qualification upgradation, pedagogical training, and organizing/participation of faculty in workshops, seminars and conferences) for improved competence based on TNA						
4.	Institutional reforms	**50**					
	Technical assistance for procurement and academic activities	25	5	5	5	5	5
	Institutional management capacity enhancement	25	5	5	5	5	5
5.	Academic Support	**550**					
	Creation of new departments / courses **(Nanotechnology Center for Energy & Environment)**	250	100	100	50		
	Enhanced Interaction with Industry (Partially the Career Planning & Placement Division and Incubation Centre)	100	25	10	10	10	10
	Student support activities Partially the Career Planning &	100	25	10	10	10	10

	Placement Division and Incubation Center						
6	Others						

(ii) Provide the targets against the deliverables as listed below :

Indicator	Weightage	Present Rating	Present Score	Target Rating	Target Score
GOVERNANCE QUALITY INDEX-16%					
% of Faculty Positions vacant	2.0%				
% of Non permanent faculty	4.0%				
% of Non-teaching staff to teaching staff	3.0%				
Total no. of Undergraduate Programs	1.0%				
Total no. of Postgraduate Programs	1.0%				
Faculty appointment turn around/cycle time in months	2.0%				
Delay in payment of monthly salary payment of faculty	2.0%				

ACADEMIC EXCELLENCE INDEX 21.5%					
Delay in exam conduction and declaration of results	3.5%				
Plagiarism Check	1.0%				
Accreditation	4.0%				
Teacher Student ration	4.0%				
% of visiting Professors	1.0%				
% of graduates employed by convocation	0.5%				
% Number of students receiving awards at National and Internal level	0.5%				
% of expenditure on library cyber library and laboratories per year	1.0%				
Ratio of expenditure on teaching staff salaries to non-teaching staff salaries	1.0%				
% of faculty covered under pedagogical training	1.0%				
% of faculty involved in “further education”	0.5%				
Dropout rate	1.5%				
No of foreign collaborations	1.5%				
Subscription to INFLIBNET	0.5%				

EQUITY INITIATIVE INDEX – 12.5%					
SC Students %	3.0%				
ST Students %	3.0 %				
Gender Parity	3.0 %				
Urban to Rural Students population	2.0%				
Existence of CASH	0.5%				
Existence of Social Protection Cell	0.5%				
Language assistance programs for weak students	0.5%				
RESEARCH AND INNOVATION INDEX – 24%					
Per faculty publications	2.0%				
Cumulative impact Factor of publication	3.0%				
H Index of scholars	2.0%				
% of staff involved principal researcher	1.0 %				
% of research projects fully or more than 50% funded by external agencies, industries etc.	2.0 %				

Total no of patents granted	1.0%				
% of faculty receiving national/International awards	1.0%				
% of research income	1.0%				
Doctoral degrees awarded per academic staff	1.0%				
% doctoral degrees in total number of degrees awarded	3.0 %				
% expenditure on research and related facilities	1.0%				
Digitization of Masters and Doctoral thesis	0.5%				
UPE/CPE.	3.5%				
% of Income generated from non-granted sources	2.0%				
STUDENTS FACILITIES – 15 %					
No of new professional development programs	1.0%				
Existence of Placement Cells and Placement policy	1.0%				
% of expenditure on infrastructure maintenance and addition	3.0%				
Availability of hostel per out station female student	3.0%				
Availability of hostel per out-station male student	2.0%				
% of students on scholarship	2.0%				
Average scholarship amount per student	1.0%				
Student Experience Surveys	1.0%				
Graduate Destination Surveys	1.0%				
INFRASTRUCTURE AND OTHERS-11%					
% Income generated from training courses	1.0%				
% Income generated from consulting	1.0%				
Infrastructural sufficiency	3.0%				
Computer coverage	3.0%				
Internet connectivity of Campus	3.0%				
	100.0%				

Project Targets for Institutions

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

Evaluation of Institutional Development Proposals (IDP)

Sl. No.			Evaluation Parameters	Marks
I	Institutional Preparedness and Implementation Feasibility			
	A.		Clarity of institutional basic information including baseline data	5
	B.		Overall proposal implementation feasibility	
		1.	Clarity in the identification of general development objectives, related specific objectives, their expected results, and its coherence with SWOT analysis	5
		2.	Have the key activities been identified clearly and adequately for each specific objective.	5
		3.	Adequacy of the Institutional Project implementation arrangements	5
	C.		Quality of SWOT analysis	
		1.	Appropriateness for the procedure adopted for the conduct of SWOT analysis and adequacy of participation of stakeholders.	5
		2.	Clarity in the identification of strengths, weaknesses, opportunities and threats	5
	D.		Coherence of proposal with State/regional development plan	5
	E.		Reasonability of proposed budget.	5
Sub-total(i)				**40**

II	**Clarity and Quality of the Action Plans for :**			
	F		Scaling up research and innovation	
		1	Quality of action plan for quantitatively increasing and qualitatively improving research activities.	5
		2	Quality of action plan to transfer technology and for commercialization of R & D (the innovation agenda)	5
	G.		Scaling up Ph.D. enrolment through existing and new programmes.	10
	H.		Scaling up Ph.D. enrolment through existing and new programmes.	10
	I.		Research collaborative activities with institution at National and International level	
		1.	Identification of options to improve and increase research collaborations at National and International levels.	5
		2.	Clarity in identification of expected quality enhancement in Masters and doctoral programmes and faculty research.	5
	J.		Potential impact and depth of proposed industry collaboration.	5
	K.		Faculty development including pedagogical training to :	
		1.	Develop faculty/technical staff in subject domain	5

		2.	Improve pedagogical skills of faculty for better student learning	5
	L	Identification of weak students and for improvement in their learning outcomes through finishing school.		5
Sub-total(ii)				60
TOTAL (I+II)				100

Table 3.1 : Criteria and Weights for Equalization Grants

Sl. No.	Criteria	Weights
1.	Population (Age Group 18.23) (Criteria reflecting Equal Per Capita Transfers)	+40
2.	Per Capita income (Criteria Reflecting Fiscal Deficiency)	-10
3.	Gross Enrolment Ratio (Criteria Reflecting Shortfall in Enrolment)	-10
4.	Performance	
	VI. Improvement in GER (over 5 years) (2018-19 to 2022-23)	
	A.1. GER All categories	+10
	A.2. GER SCs	+5
	A.3. GER STs	+5
	A.4. Gender Parity Index (Over 5 Years) (2018-19to 2022-23)	
	A.4.1. GPI – All Categories	+10
	A.4.2. GPI – SCs	+5
	A.4.3. GPI – STs	+5
	B. Expenditure on Higher Education	
	B.1. Per Capita Expenditure	+10
	B.2. Expenditure as % of NSDP(1)	+10
	C. College – Population Index	-5
	D. Institutional Density	-5
	E. Teacher – Student Ration	-5
	F. Research Output	+10
5.	Special Problems	+25
	TOTAL	**100**

(+) Positive means – higher value – larger entitlement

(-) Negative means – higher value – lower entitlement

Research output will be determined by indicators such as number of research paper published in National and International Journals, number of M.Phil., Ph.Ds. guided, number of collaborative research projects, patents generated citation impact.

ANNEXURE-1

SUMMARY OF THE PROPOSAL UNDER INSTITUTIONAL DEVELOPMENT PLAN

(P1,P2.....are the proposals numbers mentioned in the Table at2.12)

1. Proposal to start "**Central Career Planning & Placement Division with Incubation Centre** "
2. Proposal to start "**Nanotechnology Center for Energy & Environment**"

Kolhan University, Chaibasa

Central Training & Placement Cell (CTPC)

Kolhan University, Chaibasa

कोल्हान विश्वविद्यालय, चाईबासा

Proposal to start

Central Career Planning, Placement Division & Incubation Centre

Dr. Ranjeet K Karn
In-Charge,
Training & Placement

Table of Content

Preface

Training & Placement Cell: Here the word **'Training'** corresponds to the **summer internship and summer / industrial training** and **placement** means to place the students to **suitable employer**.

But, according to **National Knowledge commission** report headed by **Sam Petroda** "**One of the 10 Engineering Graduates are employable" & "One of the 25 general Graduates are employable".** That too on the basis of survey conducted in to 100 Universities / Institutions. Thus the major challenge is **to make the students employable.** Therefore we have gone through rigorous introspection about our kolhan university.

The all such the universities, the major challenge is **to make the students employable.**

Demographical analysis of the Kolhan University:

The Kolhan University is situated in the remote "Kolhan" region of the state of Jharkhand. Most of the students are either opting for the vocational / professional courses or migrating from this region to different parts of the country. Whatever remains, are opting this university. Most of them are **financially weak and socially unaware**.

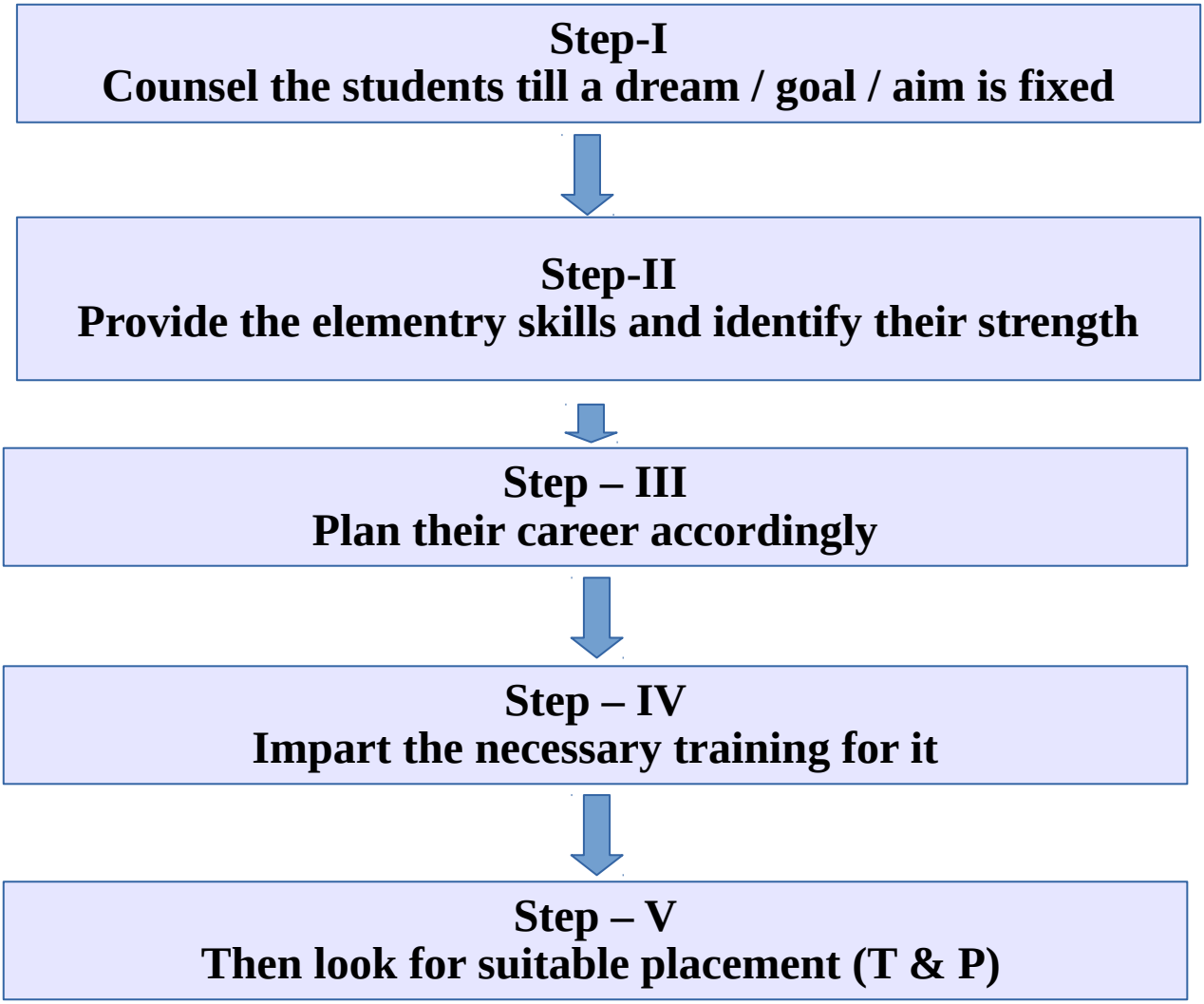
But the **most favorable thing is that the most of the students belongs to ST and reserved category.** This encourage us to facilitate the students with all the facilities and encourage them for Govt. Jobs. They may get success by relatively less efforts and get accolade for the university at national and global level.

Root Cause: The root cause of such pathetic situation is the lack of elementary soft skill and analytical skills. In USA they conduct **'Scholastic Aptitude Test (SAT)'** before admitting to the UG courses and **'Graduate Record Examination (GRE)'** before MS/PG courses. But here In India we do not have any such test. Therefore most of the students do not posses such skills.

Solution: The solution is to provide soft skills and analytical skills training to each and every students of the university and ensure its implementation, along with the academic examination. These skills are following:

- Competitive English
- Quantitative Aptitude
- Analytical Skills
- General Studies/Awareness

In view of Kolhan University, we depicting the function in following flow chart



Without implementing steps I to IV, step V can not be implemented.

Therefore we are proposing the to establish a "Central Career Planning and Placement Division (CCPPD)"

Central Career Planning and Placement Division (CCPPD)

Aims & Objective:

- Identification of Students' **potential** and **mapping their competencies**;
- Enabling **career counseling** for the students.
- **Install a professional goal** in his life according to his competencies
- Facilitate them with all the **necessary training and skill** required to achieve the goal.
- **Conducts seminars and workshops to enable the students of Kolhan University to become successful professionals.**
- **Cataloging the database** of students (their specialization, interest and academic performance);
- Providing the interlink for the enthusiastic talent ready to explore the new horizons with the growing requirement of the corporate world.
- Working as a platform for modeling the students according to the requirement of the corporate world and academic world.
- Designing a web-based job search portal for the university.
- Organize workshops and seminars for **self/Social entrepreneurship through startup India and other such programs.**
- **Initiate & promote Incubation and Entrepreneurship and for SEED Grant**

Career Planning, Placement Division & Incubation Centre

Execution Plan : Soft Skill Training

Online
Registration for CCPPD
(Mendatory for all the UG/PG students)

UG

1St Year → **Professional English & ICT/Computer**

2Nd Year → **Quantative Apptitute & GA/GS**

3rd Year → **Analytical Skill (GD/PI/) & Mock test**

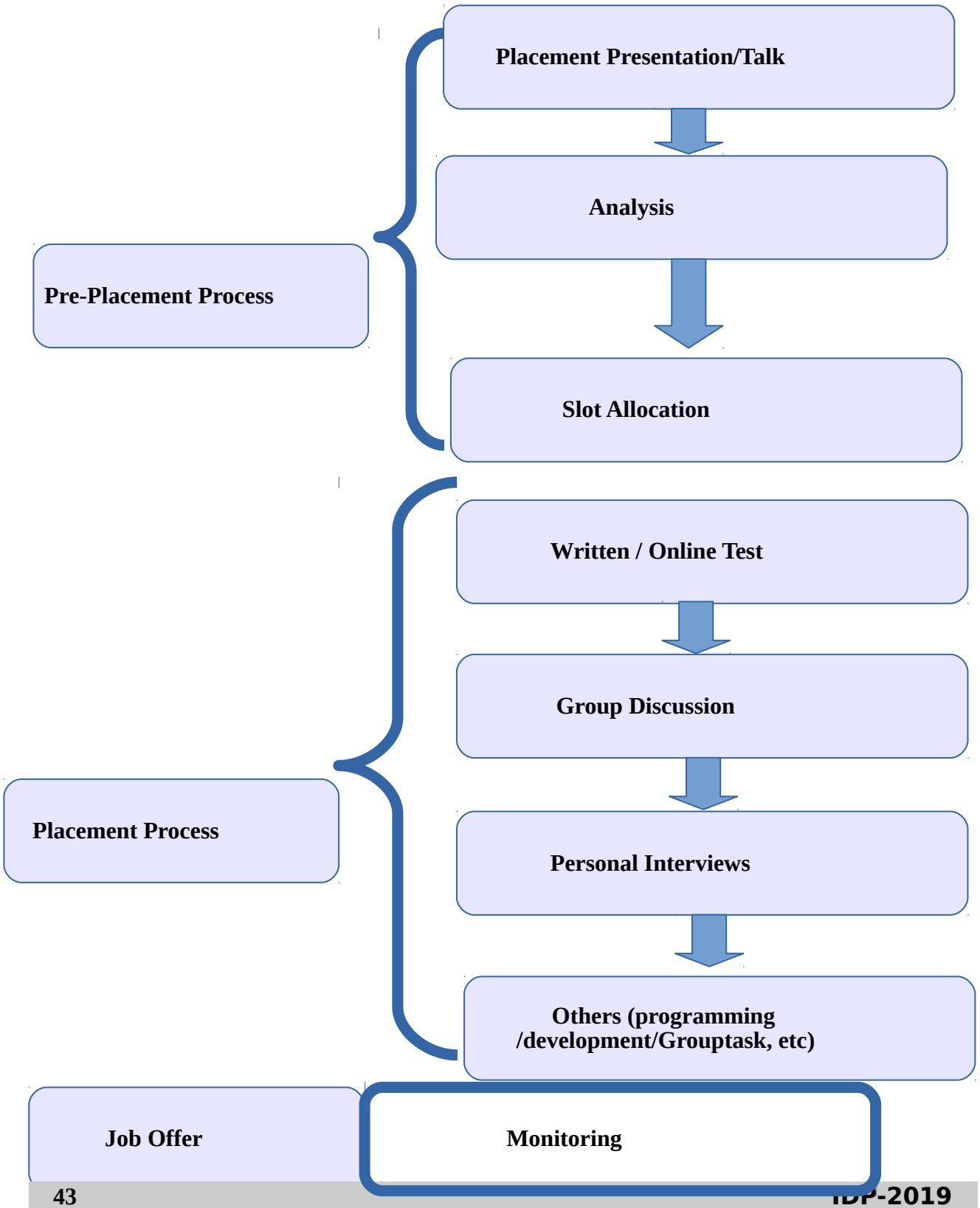
PG

1st Year ← **Professional English & GA/GS**

2Nd Year ← **Quantitative Aptitude & Analytical Skill**

Job Ready Degree UG & PG Degree
Almost ready for all competetive exams (UPSC/PSC/IIM CAT, IBPS, SSC etc)
&
As well as posses most of the necessary skills viz.
(ICT, English, Quantitative & Analytical Skills) required for Industry

Execution Plan : Placement



Budget

(All the figures are approximate and may vary time to time)

I Startup Grant:

Sl. No.	Particulars	Rate	Quantity	Total
1	Placement Office of corporate standard (a) One chamber with good quality table, chair, with sofa (b) two cabin for office for training & placement part separately. (c) one waiting hall with sofa, newspapers/magazines etc	~2 lakh	1 set	2,00,000
2	One big well furnished room (auditorium may be used for it)			
3	For regular training: One well furnished class room with lcd projector, with skype or video conferencing facility. (any existing class room may bes used for it)			
4	One meeting hall for pre placement talk of strength 20, with projector and board. (Existing Meeting Hall may be used for it)			
5.	One room for personal Interview (6 good quality chairs, with arc table with all accessory, and furnishing)			50,000
6.	Laptop & all in one Printer, and color printer (HP Laser Jet 1025)	1,00,000	1	1,00,000
7.	One table. Chair and accessory for computer operator	50,000	1 Set	50,000
8.	One computer lab with 30 Computers with networking, Projector, White, Board, Notice Board, INTERNET etc			12,00,000
9.	Library furnishing & furnitures with Reading room / preparation room for 50 students (separated study tables)			3,50,000

10.	One time book Grant			2,00,000
11.	Xerox Machine Heavy Duty			60,000
12.	Live Lecture web streaming facility with video conferencing facility with storage storage			50,000
	Total			**22,60,000**

II Annual Budget (in Rs.)

Sl. No.	Particular	Monthly	Annual	Total
	Office Expenses			
1.	Training & Placement Officer	1500	18,000	18,000
2.	Co-ordinator – Training	1000	12000	12000
3.	Coordinator – Placement	1000	12000	12000
4.	Computer Operator / Assistant	10,000	1,20,000	1,20,000
5.	Library Assistant	6,000	72000	72000
6.	Office Contingency, brochure, leaflet etc		2,00,000	2,00,000
	Soft Skill Training Expenses			
7.	Training through guest faculty, per class basis Rs. 1000/ Class (60 lecture each) (a) Competitive English		60,000	300,000
	(b) Quantitative Aptitude		60,000	
	(c) ICT		60,000	
	(d) GA/GS		60,000	
	(e) Analytical Skills, Reasoning, Interview, GD etc		60,000	
8.	Regular event of Quiz, Debate, extempore, essay competition, Mock Test (to attract students through out the year)			1,00,000
9.	Seminars / Motivational Lectures, etc..			1,00,000
10.	Traveling Guest House, local conveyance		2,00,000	2,00,000
11.	Website including registration data base			50,000

	Total			**11,84,000**

Final Budget (Sum of Startup Grant + Annual Budget)

Sl. No.	Center		Amount	Total
1.	CCPPD, at University Headquarter, Chaibasa	Startup Grant	22,60,000	8180000
		Annual Budget	11,84,000 x 5 = 59,20000	
2.	CCPPD, City Center, Jamshedpur (preferably Co-ed college)	Startup Grant	22,60,000	8180000
		Annual Budget	11,84,000 x 5	
	Total approximate			**16360000**
				~ 1,7000000

*Note: After successful execution of above plan, above mentioned facilities may be extended to all the constituent college of the university.

University Department of Physics

Kolhan University, Chaibasa

कोल्हान विश्वविद्यालय, चाईबासा

Proposal to start

Nanotechnology Center for Energy & Environment

submitted by

Dr. Ranjeet K Karn
University Dept. of Physics

Abstract

The sustainability development of the mankind depends upon innovation and research

- *to identify the possible challenges and*
- *to discover the ways to coup up the challenges.*

In the current scenario and analyzing the demographic location of the Kolhan University, we can identify the two field

1. *Nanoscience and nanotechnology for focused on energy harvesting : to look for the solution of the different problems*
2. *Environmental Science : to study and continuous monitoring of the the environment of the area & to find possible remedy of any possible adverse effect.*

Therefore, Initially we are proposing the establishment of a "**Nanotechnology Center for Energy & Environment"**

1. Introduction:

Nanoscience and nanotechnology is the present & future of innovation. Modern science & technology has reached saturation of the existing micro-electronics & structures. Due to the lack of the devices to look into nano, it was difficult to imagine the device and technology in the nano scale. But with the advent of Scanning Probe Microscopy (Scanning tunneling / atomic force microscopy in the mid 80s, has certainly revolutionize the entire scientific & technical innovation. I has touched every walk of society *i.e.* from nano-paint to energy harvesting, from space to nanoelectronic devices, from surgery to medicine and many more. This is a cross disciplinary subject, where innovation merges the science & technology & posses the hope of solving every challenge. The most challenging problem for the human being is **Energy & Environment.**

Therefore, we are proposing to establishment **"Center for Nanotechnology for Energy & Environment"** to undertake the research in the field of nanoscience and nanotechnology which

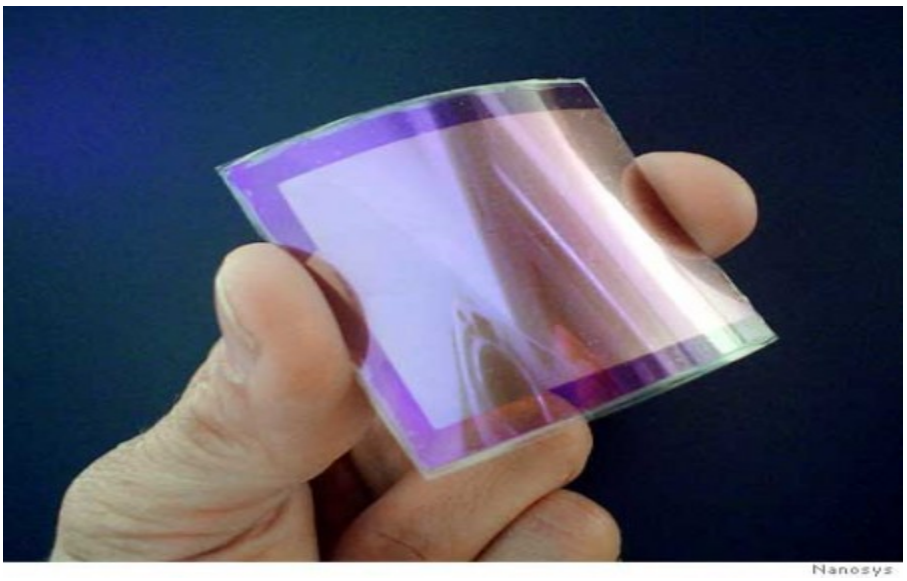
will enable us and our students to upkeep with other Universities and Institutes like **JNU, Jamia Millia Islamia, Allahabad University etc.** and keep us in line for the next 50 years or so.

It is as important to study the environmental aspects of the Minerals & Industry rich state like Jharkhand. Environmental issues are far more challenging to understand and cope with the problems such as global warming, air and water pollution and various other challenging problems related to environment & its effect on the flora & fauna of the surrounding. This field also require special attention.

2. Nanotechnology for Alternative & Clean Energy Sources

Nanotechnology is finding application in traditional energy sources and is greatly enhancing alternative energy approaches to help meet the world's increasing energy demands. Many scientists are looking into ways to develop clean, affordable, and renewable energy sources, along with means to reduce energy consumption and lessen toxicity burdens on the environment [1, 3]:

- Nanotechnology is improving the efficiency of fuel production from raw petroleum materials through better catalysis. It is also enabling reduced fuel consumption in vehicles and power plants through higher-efficiency combustion and decreased friction.
- Nanotechnology is also being applied to oil and gas extraction through, for example, the use of nanotechnology-enabled gas lift valves in offshore operations or the use of nanoparticles to detect microscopic down-well oil pipeline fractures.
- Researchers are investigating carbon nanotube "scrubbers" and membranes to separate carbon dioxide from power plant exhaust.



New solar panel films incorporate nanoparticles to create lightweight, flexible solar cells. (Image courtesy of Nanosys)

- Researchers are developing wires containing carbon nanotubes that will have much lower resistance than the high-tension wires currently used in the electric grid, thus reducing transmission power loss.
- Nanotechnology can be incorporated into solar panels to convert sunlight to electricity more efficiently, promising inexpensive solar power in the future. Nanostructured solar cells could be cheaper to manufacture and easier to install, since they can use print-like manufacturing processes and can be made in flexible rolls rather than discrete panels. Newer research suggests that future solar converters might even be “paintable.”
- Nanotechnology is already being used to develop many new kinds of batteries that are quicker-charging, more efficient, lighter weight, have a higher power density, and hold electrical charge longer.
- An epoxy containing carbon nanotubes is being used to make windmill blades that are longer, stronger, and lighter-weight than other blades to increase the amount of electricity that windmills can generate.
- In the area of energy harvesting, researchers are developing thin-film solar electric panels that can be fitted onto computer cases and flexible piezoelectric nanowires woven into clothing to generate usable energy on the go from light, friction, and/or body heat to power mobile electronic devices. Similarly, various nanoscience-based options are being pursued to convert waste heat in computers, automobiles, homes, power plants, etc., to usable electrical power.
- Energy efficiency and energy saving products are increasing in number and types of application. In addition to those noted above, nanotechnology is enabling more efficient lighting systems; lighter and stronger vehicle chassis materials for the transportation sector; lower energy consumption in advanced electronics; and light-responsive smart coatings for glass.

3. Nanotechnology for Environmental Remediation

In addition to the ways that nanotechnology can help improve energy efficiency (see the section above), there are also many ways that it can help detect and clean up environmental contaminants [2]:

. Nanotechnology could help meet the need for affordable, clean drinking water through rapid, low-cost detection and treatment of impurities in water.

- have developed a thin film membrane with nanopores for energy-efficient desalination. This molybdenum disulphide (MoS_2) membrane filtered two to five times more water than current conventional filters.
- Nanoparticles are being developed to clean industrial water pollutants in ground water through chemical reactions that render the pollutants harmless. This process would cost less than methods that require pumping the water out of the ground for treatment.
- Researchers have developed a nanofabric "paper towel" woven from tiny wires of potassium manganese oxide that can absorb 20 times its weight in oil for cleanup applications. Researchers have also placed magnetic water-repellent nanoparticles in oil spills and used magnets to mechanically remove the oil from the water.
- Many airplane cabin and other types of air filters are nanotechnology-based filters that allow “mechanical filtration,” in which the fiber material creates nanoscale pores that trap particles larger than the size of the pores. The filters also may contain charcoal layers that remove odors.
- Nanotechnology - enabled sensors and solutions are now able to detect and identify chemical or biological agents in the air and soil with much higher sensitivity than ever before.
- Researchers are investigating particles such as self-assembled monolayers on mesoporous supports (SAMMS™), dendrimers, and carbon nanotubes to determine how to apply their unique chemical and physical properties for various kinds of toxic site remediation. Another sensor has been developed by NASA as a smart phone extension that firefighters can use to monitor air quality around fires.

4. Equipments & Laboratory Infrastructure:

Sl. No.	Name of the apparatus	Specification	Company Name & Model No.	Tentative Price	Remark
	Material Synthesis				
1.	Furnace	Temp. Range (30-3000 ^oC) programmable	CERO	5,00,000	M. Sc.
2.	Thin Film Deposition Technique	Ultra High Vacuum 10^{-8} mbar, with		15,00,000	M. Sc

		double thickness monitoring,			
3.	Ball Milling low energy			2,00,000	
4.	High energy ball milling			3,00,000	
5.	Sol-gel			2,00,000	M. Sc.
6.	Micro-balance		Shimadzu, Japan	2,00,000	
7.	Ultrasonicator (35 kHz),			1,00,000	
8.	Magnetic Stirrer (Halley)			1,00,000	
9.	Vacuum Oven (Halley),			1,00,000	
	Characterization Technique				
10.	XRD	Powder and thin film, single crystal X-ray diffraction A 20 KVA on-line UPS system Oxford	Bruker AXS KAPPA APEX II	100,00,000	M. Sc
12.	FE-SEM			1,50,00,000	
13.	UV-VIS Hitachi	200-1100 nm		10,00,000	M. Sc
14.	NaI Scintillator Detector			5,00,000	
15.	Energy Dispersive X-ray Fluorescence (EDXRF) Spectrometer - PANalytical Epsilon 5			1,00,00000	M. Sc
16.	FT-IR/ Raman Spectrometer with Microscope - Varian 7000 FTIR, Varian FT-Raman and Varian 600 UMA			50,00,000	M. Sc.
17.	Manual Hydraulic Press for FTIR - Spectrachrom Instruments CAP-15T			1,00,000	M. Sc.
18.	Semi Automatic 40Ton			1,00,000	M. Sc.

	Hydraulic Press for XRF sample preparation - Insmart Systems INSMART XRF 40				
19.	Si Drift Detector (SDD)		KETEK AXAS-A	10,00,000	
20.	IV Characteristic 77K onward,			5,00,000	
21.	Nanovoltmeter,			5,00,000	M. Sc.
22.	Pico-Ammeter,			5,00,000	M. Sc.
23.	LCR Meter			15,00,000	M. Sc.
24.	Lock-in Amplifiers			5,00,000	M. Sc.
25.	Electrometer,			1,00,000	M. Sc.
26.	Impedance Analyser			1,00,000	M. Sc.
27.	High Precision DMM,			50,000	M. Sc.
28.	Spin Coating Unit			3,00,000	M. Sc.
29.	High Precision Micro-balance			2,00,000	M. Sc.
30.	Thermal Coating Unit			10,00,000	M. Sc.
31.	Programmable Constant Current Source			1,00,000	M. Sc.
32.	Hall effect measurement			1,00,000	
33.	Magneto-resistance measurement set up (RT-200C)			5,00,000	
34.	Four probe conductivity set up (RT-200C)			1,00,000	
35.	Digital Storage Oscilloscopes		LeCroy	50,000	
36.	Photo Detector (Instec,USA, PD-02)			5,00,000	
37.	Chemicals			5,00,000	
	Environmental Science				
38.	High Volume Sampler			30,00,000	
39.	Soil Kit				
40.	Titration				

41.	Atomic Absorption				
42.	Spectrophotometer				
43.	Gas Chromatography				
44.	Flame photometry				
45.	Electronic Digester				
46.	Leminer Flow & Exhaust (2 No.)				
47.	Ion Chromatography				
48.	Other contigency & furnitures / Miscellaneous			72,00000	
	Total			7,00,00,000	

All these equipments are high precision & should be purchased from Govt of India portal dedicated for it (www.gem.gov.in). Otherwise the tax payer's hard earn money will be wasted.

5. Human Resources Required:

Sl. No.	Post (Contractual Fellowship)	Quantity	Eligibility	Rate / month	Total	Total / Year
1.	Research Associate	02	Ph. D. with relevant experience on the equipments	36000 + HRA	~1,00,000	12,00,000
2.	Research Assistant	04	M. Sc. (NET/GATE/ JEST)	25,000 + HRA & 28,000 + HRA	~173000	2076000
3.	Project Assistant	04	B. Sc.	15,000	60,000	7,20,000
						3996000 ~4000000
	For 5 Years					**200,00,000**

6. Building Infrastructure:

A separate building for physics department along with "Centre for nanp technology for Energy & Environment" should be made as it is available in various other University & Institute like (JNU, NEHU, PUNE University etc.). The building must consists of world class laboratory

infrastructure, furnishing, power backup, vibration free. The detailed architectural map should be prepared after prior survey of such sophisticated instrumentation facility at other top institutes and Universities keeping in mind about next 100 years. Tentative budget may be **~ 05 Crore (including furniture & accessories)**.

Sl. No.	Items	Amount (lac)
01.	Equipments & Laboratory Infrastructure:	700
02.	Human Resources Required:	200
03.	Building Infrastructure:	500
	Total	1200

7. Academic Advantage:

Most of the above mentioned equipments & infrastructures are the integral parts of almost every forward looking & progressive universities & institutes in India. Most of these equipments are being included in the M. Sc. Level. There are the part of M. Sc. Experiments, dissertation/ project. Even the new CBCS syllabus of our university contains it. Therefore, it is essential to impart quality education to even our M. Sc., M. Phill & Ph. D. students, so that they can compete with their counterparts of different Universities & Institutions in India & the Globe.

- M. Sc. Physics Specialization in Nanotechnology (already existing, without laboratory infrastructure in the new CBCS syllabus)
- M. Sc. Material Science (Self Finance)
- M. Tech. Nanotechnology (Self Finance)
- B. Sc. Environmental Science (Self Finance)
- M. Sc. Environmental Science (Self Finance)
- M. Tech. Environmental Science (Self Finance)

8. References:

1. United Nation University – Institute of Advance Studies (UNU-IAS) Report Innovation in Responding to Climate Change: Nanotechnology, Ocean Energy and Forestry, 2008.
2. Combating climate change : Nature Nanotechnology, Vol.2 No.6 June 2007.
3. The path towards sustainable energy, NATURE MATERIALS, VOL 16, JANUARY 2017.