

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

**PHASE-III**

**INSTITUTIONAL DEVELOPMENT PROPOSAL  
for  
Sub-component 1.1  
Institutional Development for Participating Institutions**

**Submitted by**



**Bundelkhand Institute of Engineering & Technology  
Jhansi, Uttar Pradesh**

**Mission of Institute:** "To produce world class Technocrats"

**Vision of Institute:** The Institute looks forward towards establishing itself as one of the premier world class technical Institute imparting quality teaching at graduate and postgraduate level to the student in the area of Industrial requirement and emerging technologies.

## 1. INSTITUTIONAL BASIC INFORMATION

### 1.1 Institutional Identity

Name and address of the Institution	:	Bundelkhand Institute of Engineering & Technology Kanpur Road, Jhansi, Uttar Pradesh
Year of establishment	:	1989
Is the Institution AICTE approved?	:	Yes
Furnish AICTE approval No.	:	Northern/1-2812884584/2016/EOA
Type of Institution	:	<del>Govt. funded/</del> Govt. aided/NIT
Status of Institution	:	Autonomous Institution Status by UGC/ <del>Non-autonomous</del> / <del>Technical</del> <del>University/ Deemed to be University</del> or <del>University</del> <del>Engineering</del> <del>Faculty/</del> <del>Department/ Constituent Institution</del>
Name and Designation of Head of the Institution (Full time appointee)	:	Prof V.K. Tyagi, Director

### 1.2 Academic Information:

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

S.No	Title of programmes	Level (UG, PG, PhD)	Duration (Years)	Year of starting	AICTE sanctioned annual intake	Total student strength in all years of study
1	Chemical Engineering	U G	4	1996	30	112
2	Civil Engineering	U G	4	1990	45	194
3	Mechanical Engineering	U G	4	1990	45	193
4	Electrical Engineering	U G	4	2007	60	234
5	Electronics Engineering	U G	4	1989	60	232
6	Computer Science & Engineering	U G	4	1989	60	263
7	Information Technology	U G	4	2001	40	151
8	Environmental Engineering	PG	2	2005	18	19
9	Construction Technology & Management	PG	2	2005	18	29

10	Manufacturing Science & Technology	PG	2	2005	18	20
11	Digital Signal System	PG	2	2006	20	24
12	MBA	PG	2	2007	60	95
13	Thermal Engineering	PG	2	2012	18	27
14	Bio Medical Engineering	PG	2	2014	18	7
15	Energy System	PG	2	2014	18	4

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

Total no of programmes eligible for accreditation (at least one batch pass out): 15

No. of programmes accredited: NIL

No. of programmes applied for accreditation: NIL

- **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		Engineering Disciplines		Disciplines (Physics, Chemistry, Maths and English/ other		Engineering Disciplines		Disciplines (Physics, Chemistry, Maths and English/ other				
	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)
50	24	-	8	-	6	47	-	3	-	-	-	-	38	12	50

R=Regular, C=Contract

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

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

Bundelkhand Institute of Engineering & Technology Jhansi (formerly Bundelkhand Engineering College Jhansi) was established in the year 1986 with an objective to develop region by imparting technical education and research activities in respective field. The first batch was admitted in 1989 with two branches Computer Science & Engineering and Electronics and Instrumentation Engineering with an intake of 30 in each branch. Subsequently, basic infra-structural facilities on a land of 240 acres were being started gradually to establish a fast growing modern Technical Institution. In 1990 Civil Engineering and Mechanical Engineering with an intake of 20 students; in 1997 Chemical Engineering with an intake of 30 students; in 2001 Information Technology with an intake of 40 students and in 2005 Electrical Engineering with an intake of 60 students was introduced. All PG courses with MBA came into existence in the following years to come. Thus total intake of student in the Institute became 578 at present in all UG and PG programs. With the above background the Institute has also scaled-up PG and Doctoral programs by in the thrust areas in order to give an impetus to in-house research efforts during previous years. Now institute foresee strengthening the education and research activities by increasing enrollments in existing PG courses, more enrollments in Doctoral programs, enhancing research activities, imparting consultancy services. This would enhance not only Institute's profile but also contribute to its financial status and better employability and emoluments to passing out students.

The objective of TEQIP-III is envisaged as follows:

- Improvement in teaching learning process by implementing outcome based education, updating of faculty and staff qualifications / knowledge, enhancing learning atmosphere, better teaching aids etc.
- Increasing of Student employability by student counselling, industry training, industry visit, finishing school, better institute – industry – interaction, exposure of students to real field problems.
- Increasing faculty productivity and motivation. In this activity institute has proposed to organize and encourage its faculty to participate in workshops / seminars / conferences / pedagogical training programs. Staff training programs are proposed to be organized for personality development and motivational changes.
- Establishing a twinning system. In this activity twinning arrangement would be carried out with high performing institutes. The area of twinning would be decided based on SWOT analysis of host and twinning institutes. The institute has also developed excellent relationships with the network institutions during the TEQIP Phase-I and Phase-II which shall be further strengthened under twinning arrangements.
- Recruitment and retention of high quality faculty (Institute foresee this activity through better faculty appraisal systems, the faculty recruitment plan, better satisfaction thorough enhance research and exposure opportunities).

An expenditure of Rs 15.00 crore (with breakup on annexure IV) is expected in all these activities and for which a detail development plan of institute is proposed.

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

(a) Improving the learning outcomes of the students

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

Based on mission and vision of the institute and department, the need of faculty training will be identified. Institute will spend about 10% of the outlay for project on various component of faculty training. The faculty training may be carried out through the following activities.

- The faculty member with qualification of Masters Degree will be encouraged for their doctoral study.
- The purpose of upgradation of subject is to make the faculty aware of the advances in knowledge, technologies and research methodologies for improving their performance and for achieving the objectives of Institute / Department. Faculty will be given appropriate opportunities for training in their subject domain. The institutions and industries will be identified for collaboration.
- Faculty will be encouraged to participate in seminars, conferences and workshops both National and International. Short-term research/postdoctoral visits to laboratories/institutions of high reputation; short-leave for carrying out collaborative research at institutes of repute will be permitted. The faculty participating in such activities will be encouraged and supported to visit close-by institutions and laboratories of his/her interest.
- Institute will also support a small seed grant to faculty to venture into new directions of research within the specified theme. However faculty members have to obtain further funding from external agencies to sustain his / her research and research staff
- Faculty will be encouraged for academic collaboration with academic institutions and R&D organizations within India and outside the Indi
- For improving the effectiveness of teaching of faculty members, pedagogical training will be must for faculty members who are in early career. The pedagogical training will be based on bloom's taxonomy.

2. Staff training (Technical & Administrative staff)

Staff and officer training is necessary for increased employee motivation, increased efficiencies in processes and increased capacity to adopt new technologies / methods. Institute envisages training for various level of staffs and officers.

**Class IV:** Attitudinal and mind-set change, personality development, motivation

**Class III:** Attitudinal and mind-set change, personality development, communication skills motivation, office modernization, advance learning in their relevant occupational areas, Operation and Maintenance of modern laboratory and advanced equipments.

**Faculty (including contract):** Attitudinal and mind-set change, Personality development, Communication skills, Motivation, Qualification upgradation, Effective teaching – learning (pedagogy) processes, Advanced subject knowledge, Advanced R&D activities, lab/workshop development, Quality management, Standard conferences, consultancy,

**High Officials:** Attitudinal and mind-set change, Personality development, Communication skills, Motivation, Qualification upgradation, Effective teaching – learning (pedagogy) processes, Advanced subject knowledge, Advanced R&D activities, Lab / workshop development, Quality Management, Attachment to industry and premiere R&D organizations, consultancy, Planning and Implementation, Budgeting Financial Management, Management Capacity Development, Departmental / Institutional Management,

S.NO	STRATEGIC PLAN	TIME LINE
<b>Faculty Training</b>	In house faculty training programs,	1 programme every months
	Sponsoring faculty for Training programmes at IITs, NITs	During every summer / winter vacations
	Virtual Lectures by foreign and Indian experts	Every Saturday Evening
	Expert Lecture by eminent academicians	Every week
<b>Staff Training</b>	Training session for lab attendant and lab assistant,	During every summer / winter vacations
	In housing training on various technical / non technical topics	1 programme every months
	Visit to premier R&D Labs	1 visit every sixth months

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

At present the number of UG. Students' intake per year is 340, the number of PG intake is 188. Therefore the efforts will be made to enrolment of more number of M. Tech candidates. However, the number of Ph.D. candidates is very less (presently 6 under TEQIP II). The efforts will also be made for more PhD admission by identifying and eradicating the hurdles.

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.

### **Smart classrooms**

Presently, institute has 6 smart class rooms which are currently being used to conduct classes of MOOC-NPTEL and QEEE. But institute has planned to setup 5 more smart class room (one in each department). Some of the activities planned for smart class rooms are as follows.

- Conversion of Media Centre into virtual class room of National Knowledge Network (NKN). For this additional equipment for teaching station and interactive pad etc will be required.
- Provision of LCD projector with desktop computer in each classroom.
- Subscription of online video conferencing and teaching software like Zoom, people-link will be required.

### **Strengthening of E-Library Resources**

- Strengthening of existing e-library resources by expanding the list journals of science direct, springerlink, IEEE explorer etc.
- Subscription of E-Books from portals of various publishers.
- Membership of National library resources like e-ShodhSindhu, DELNET, INFLIBNET etc.
- Subscription of bibliographic E-Databases like Scopus, SCIFINDER Scholar, Web of science etc.
- CD database of Indian Standard Codes, ASTM Standards etc.
- Subscription of reputed encyclopedia, dictionaries etc.

### **Campus WIFI**

Institute has presently 1000 MBPS internet connection of NKN and an optical fiber base campus wide network (CWN). Some of the buildings and hostels are having WI-FI network, therefore institute proposes strengthening of this network. The provision of following specific things would be made.

- Conversion of all existing CAT5 cables to CAT7 cables
  - DHCP relay services
  - 802.1q VLAN trunking
  - Gigabit Ethernet fiber optic interfaces
  - Operates with any Wireless Access Point
  - Supports 802.1x authentication
  - Supports VPN tunnels
  - Restricts traffic based upon protocol
  - Provides protection from Denial of Service attacks
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. Special summer semester programmes will be conducted for students securing fail grades following even semester examinations. This will enable students to complete the courses in which they secure fail grade. The summer course will be for 6 week duration and will make new assessment for weak students based on their performance in summer course.



Special programs will also be conducted in pre-final years in order to improve and hone their technical and soft skills. Normally 6-8 sessions will be conducted during pre-final year and 2-3 sessions will be conducted in final year. These sessions shall be normally conducted in the weekends. Classes will be taken by selected experienced regular faculty and external experts.

The programme modules will include:

Core subject (branch dependent)

Core subjects (General)

Language courses

Career planning

Soft skills including behavioral science

The institute will also provide a scope for slow pace education for academically weak students. Such weak students will be assigned a faculty advisor. The faculty advisor will counsel him / her on regular basis on academic and personal issues. The faculty advisor will also advise weak students to opt for slow pace. The action plan for weaker students will involve the following.

Grouping the students with respect to their need.

Conducting remedial classes on every weekend and during vacation.

Courses to be offered by experienced faculty members with provision for extra remuneration.

It is proposed to make groups of exceptionally bright and weak students so that the bright students can assist the weak students in academic work thus improving the later chances of passing examination and improving self esteem. Some of these activities will be conducted at departmental level and majority will be conducted at institute level. These activities will be monitored and coordinated by the Nodal Officer (Equity Assurance).

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

**Academic Reforms:**

Institute has proposed to implement the choice-based credit system (CBCS) from academic session 2017-2018. The syllabus of a particular course will be divided in the paper, unit, subunit, credits. For implementation of CBCS following steps has been planned.

- Review of curricular contents (study papers, terms papers, assignments, workshop assignments, experiments etc) of certificates, diploma, under-graduate, post-graduate, M Phil, PhD programmes.
- For the sake of clarity of faculty, students and examiners, all the curriculum contents shall be specified and sub-divided into units and if need be into sub-units, which shall be subsequently assigned numerical values and termed as credits.

- Faculty of the concerned 'department' shall deliberate and decide on (a) core-credits, and (b) electives or optional credits for different level of academic programmes.
- Department faculty shall evaluate and decide on the relative weight-age of core and elective credits.
- Decision on the total credits to be earned (or completed) by students undergoing undergraduate, post-graduate and PhD programmes.
- Generally core credits would be unique to the programme and earning core – credits would be essential for the completion of programme.
- On other hand , elective credits shall be likely to overlap with other programmes e.g. elective course on optimization will be read by students of Mechanical Engineering, Civil Engineering, MBA etc.

#### **Non-Academic Reforms:**

Following non academic reforms are implemented like financial autonomy through Block Grant funding of non-salary non-plan expenditures with authority to appropriate and re-appropriate; Retention of Tuition and other fees for ensuring sustainability of the reforms process; Authority to generate, retain and utilize Internally Generated Revenue (IRG) through different academic and non academic activities; Establishment of Four Funds i.e. Corpus, Staff Development, Maintenance and Depreciation Funds to create financial strength of the institutes to sustain autonomy.

However following reforms has been planned during next sessions.

- Delegation of decision making powers to all senior institutional functionaries with accountability
- Filling up all teaching and Staff vacancies
- Regular meeting at Director, HOD, Registrar level for pointing out impediments in institute progress
- Regular in-house as well as external satisfaction survey among all stake holders.

#### **(b) Improving employability of the students**

- Training and placement section shall be made more vibrant to train our students in various industries as a part of curriculum.
- Efforts would be made for selection / appointment of Professor (Training & Placement) for full time devotion for this activity.
- Efforts would be made for organizing HR meet of industries / corporate for establishing relation with HR sections.
- Various industries will be invited to the campus for campus interviews.
- Defense services recruitment agencies will be contacted to conduct interviews through university entry scheme.
- Participation in various Job fairs will be done wherever necessary.
- Students will be allowed go near by side like Kanpur Delhi for attending written test/ interviews/ for various industries visiting to IITs.
- Practice in GD, Personal Interviews, Counseling for written test, procedure for applying will be given through departmental T&P counselors.

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

- Organizing workshops, symposia with joint participation of the industry
- Encouraging engineers from industry to visit institute to deliver expert lectures
- Participation of experts from industry in curriculum development
- Arranging training for faculty members at industries for at least 2-4 weeks
- Professional consultancy by the faculty to solve industrial problems
- Sharing testing facilities between Industry and Institute
- Joint research programmes and field studies on industrial problems
- Visit of industry executives and practicing engineers to the institute for an express overseeing research facilities and laboratories, discussions and delivering lectures on industrial practices, trends and experience.
- Memoranda of Understanding between industries and institute to bring the two sectors emotionally and technically closer
- HRD programmes for practicing engineers by the faculty
- Collaborative degree programmes
- UG and PG project work in industry under the joint guidance of faculty and experts from industry.
- Visiting faculty /Professor from industry
- Professional chairs sponsored by industries at the institute
- R&D labs sponsored by industries at the institute.
- Scholarship/fellowship instituted by industries at the institute for students
- Summer /Winter internship for students
- Workshop on current /latest technology developments in the concerned areas of industries

8. Student career counseling and placement

Institute shall develop career counselling cell under direct supervision of Professor Training & Placement, which shall counsel the students based on their skills and interest. This cell will also impart training to students like personality development, preparation of interview & stress management.

(c) Increasing faculty productivity and motivation

9. sponsored research, consultancy and other revenue generating activities

Institute has already implemented the rule for sponsored research, consultancy and other revenue generating activities like outreach programmes. Institute will encourage faculty members to interact with industry to obtain consultancy assignments and training for field professionals. Institute has also planned following to encourage revenue generation

- To start part-time out-reach courses,
- Production of learning aids
- Development of software, etc.
- Creation of Professional Development Fund (PDF), of the concerned investigators/ consultants of sponsored projects.

(The money of PDF may be utilized as travel (within the country or abroad) for professional work including per diem expenses. Purchase of books, journals, membership fees of professional societies. Conference (within country or abroad) related expenses. Purchase of consumables for professional work. Purchase and maintenance of equipment, including AMC for equipment. Other expenditures such as AMC and maintenance charges for the equipments, cost of photocopying, binding, cost of telephone calls, hiring of manpower, hiring of services such as taxis, caterers etc. needed for professional work)

### 2.3 Provide an action plan with timelines for

1. Obtaining autonomous institution status from UGC  
Institute has obtained academic autonomy from UGC w.e.f academic session 2011-2012. Presently institute determines and prescribes its own courses of study and syllabi, and restructure and redesign the courses as per need of curriculum. But for effective utilization of autonomy institute will evolve improved methods of assessment of students. Moreover, institute is also committed to use modern tools of educational technology to achieve higher standards and greater creativity. Institute has also made a plan to promote healthy practices such as community service, extension activities, projects for the benefit of the society at large, neighborhood programmes, etc.
2. Improving the NBA accreditation status  
Presently none of the courses of institute is NBA accredited. Therefore, institute has made following time line for NBA accreditation:

S.N	Activity	Timeline
1	Record updating and document preparation	May 2017
2	Effective implementation of outcome based education (OBE)	July 2017
3	Filling of all vacant teaching post / Implementation of career advancement scheme	July 2017
4	Fee submission to NBA and SAR posting	August 2017
5	SAR submission	September 2017
6	Expert Visit	December 2017

### 2.4 Describe the following in brief:

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

Institute is affiliated with Dr APJ Abdul Kalam Technical University (AKTU), Lucknow and has been granted autonomy by UGC. But the admissions are made by AKTU and some of the seats of BTech/MTech remains vacant due to some delay in the process. Moreover, the PhD admissions are also not done timely on regular basis. Therefore, institute expects to sort-out these problems.

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

- Presently institute's BOG is as per recommendation of UGC. Institute will made all efforts to call meeting of BOG regularly i.e. at least two times in a year.
  - Institute will make efforts to implement openness and transparency in the operation of governing bodies
  - Institute will register and publicly disclose of interests of members of its governing body.
  - Institute will make effort for conduction of governing body meeting in an open manner, so that this will provide as much information as possible to students, faculty, the general public and potential employers on all aspects of institutional activity related to academic performance, finance and management.
3. Is there an ERP/MIS system existing, if yes, then any improvement, modification suggested.

Presently, institute is using web based automation system for student registration, examination form and examination related work. But institute has made phase-wise plan to extend the automation by introducing following components.

S.N	Modules of web-based automation	Time-line
1	<ol style="list-style-type: none"> <li><b>1. Student Registration</b></li> <li>2. Student Enrollment module with Eligibility, Migration,</li> <li>3. Transcript etc</li> <li>4. Examination Module               <ol style="list-style-type: none"> <li>a. Undergraduate</li> <li>b. Postgraduate</li> <li>c. Ph. D</li> </ol> </li> <li>5. Course Management</li> <li>6. Convocation.</li> <li>7. Teacher's Information Module.</li> <li>8. Student self service portal</li> <li>9. Fee Management and Accounting</li> </ol>	Phase I (modules in bold letters already exist)
2	<ol style="list-style-type: none"> <li>1. Financial accounting module</li> <li>2. Institute Level communication and notification management</li> <li>3. Materials Management</li> <li>4. Payroll management</li> <li>5. Human Recourses Management Module</li> <li>6. Funded Project Monitoring</li> <li>7. File &amp; Notes Tracking System</li> <li>8. Asset &amp; Estate Management</li> <li>9. Hostel Management &amp; Mess accounting</li> <li>10. Guest House Management</li> </ol>	Phase II
3	<ol style="list-style-type: none"> <li>1. Transport &amp; Fleet Management</li> <li>2. Student Alumni</li> <li>3. Student Activities</li> <li>4. Health Centre Module</li> <li>5. Document Management Module</li> <li>6. AICTE EOA compatible interface</li> <li>7. RTI Cell</li> </ol>	Phase III

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

Institute has made a plan to synchronize the syllabus of different B Tech course with syllabus of GATE. All the courses will be covered in the B Tech syllabus by third year (sixth semester) of course. A test series from old GATE question papers would be conducted in the evening hours during Month of January and February. An effort will be made for a dummy online examination to simulate with actual GATE examination.

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

The purpose of twinning is to envisage a tie-up between BIET Jhansi and another College/Institution of repute. In this mode, the BIET will enter MOU with prestigious institutes endowed with human and physical resources and good learning ambience.

The main objective of the Twinning will be to invite faculty of BIET and reputed institutes like IITs to engage in project Twinning. The concept of Twinning will be based on exchange of research that goes beyond exchange or research results at regular scientific conferences and workshops. In this mode, the BIET will enter MOU with these prestigious institutes. For selection appropriate twinning partner and twinning area, SWOT analysis is necessary. A SWOT analysis of BIET was carried involving all stake holders, which is summarized below.

#### **Summary of SWOT Analysis:**

##### **Strengths**

##### **S1 Wide and Huge Infrastructure**

The Institute is located in city of Jhansi with huge campus area of 240 Acre and consists of mainly three identified areas e.g. Hostel Area, Academic Area and Residential Area. The academic area has 5 academic and one administrative block connected with corridors. The institute is also completely residential for students and staff/faculty. There are six boys' hostels and two girl's hostel to accommodate students. One additional boy's hostel to lodge 144 students is under construction.

The departments of Civil, Mechanical, and Electronics Engineering are located in individual blocks where as Department of computer Science, Chemical Engineering, Applied Science and Information Technology are located in a separate building named as Academic Block.

##### **S2 High Standard of Academics**

The students are admitted in this institute by Uttar Pradesh State Engineering Entrance Examination and most of the seats are get filled at 1<sup>st</sup> or 2<sup>nd</sup> number. The students has also outperformed in the university examination and national level competitive examination with top ranking in the merit list.

##### **S3 Young, Energetic, Motivated and Supportive Research Environment**

The institute has strong team for 40 faculty members with average age of 39. All the faculty members contribute enthusiastically in the growth of institute as well as their growth. The faculty members have obtained their qualification from premier institutes like IITs and NITs with more than 67 percent of faculty

member and all are continuously involved in the research activities in the area their interest resulting total 31 numbers of papers were published in peer reviewed / reputed journals in year 2015-16. The participation / publication of faculty members in national and international conferences/journals is relatively high.

#### **S4 Location**

The institute is located in border district of Uttar Pradesh i.e. Jhansi, neighbouring to Madhya Pradesh. Therefore institute has strong linkage with institute/organization/ Departments of Madhya Pradesh. The institute has been involved in organizing various courses of field professionals of Madhya Pradesh. The Jhansi city is also well connected by railways and roadways. The main railway line connecting to Delhi & Chennai passes through Jhansi, divisional head quarter of North Central Railway, whereas the connecting corridor of North-South Corridor and East-West Corridor also passes through Jhansi.

#### **S5 Low Administrative Interference and Conducive Atmosphere**

It has been assessed less administrative interference as compared state government institution resulting in better satisfaction in the service matter. During previous one year, the institute has successfully conducted interview for two times for selection /promotion of staff and faculty members. This also imparts more faculty involvement in day to day administrative and accounting work of institute.

#### **Weakness**

##### **W1 Low Faculty Strength**

At present, there is very less number of faculty members as per AICTE norms. The faculty strength was sanctioned as per requirement of initial branches but with expansion of branches/courses, the faculty strength was not sanctioned accordingly. Therefore some courses like MBA, B Tech (IT), B Tech (Electrical Engineering) are running without permanent /regular faculty. The visiting/guest faculty are only expected to teach the classes.

##### **W2 Lack of Industry Network Partnership**

As has been often emphasized, the major components in the development of technology and industry are Technical Institutions, Industry, Industrial associations, Research and Developments Organizations, etc. Bundelkhand Institute of Engineering and Technology Jhansi, has the advantage of high-end technology industrial establishments within the close vicinity, which has yet not been exploited to the fullest extent. The interactions with industries have been limited to occasional expert lectures from the industry persons and visits of students / faculty to industries.

##### **W3 Unpredictable Plans**

For better utilization of grants and institute development, the activities of institute must be assessed and prioritize at initial stage, whereas, this trend is lacking at this institute resulting in ad-hoc procedures for planning and development

#### **Opportunities**

##### **O1 Government Priority to the Region**

Being a frequent draught prone region, it has more central and state political attentions. Therefore during previous years various funding for community services like watershed management, water supply scheme, and agricultural universities has been sectioned by central government. The local administration

and state's official has good interaction with institute faculty for various studies. Therefore institute look forward academic / research interventions on these areas.

**Threats**

Addition of new coming up colleges in private sector could pose a major threat in future.

**T1 Escalating Cost of Higher Education**

The escalating cost of higher education is a direct threat to academia in general. Although it is a problem that is being faced by all disciplinary groups within the country, the technical education groups which are growing multiplicatively are more vulnerable owing to their more economical interest. In some institutions, the facility has been scaled down to the barest minimum required to satisfy existing legal requirements to keep the cost at minimum. In addition, setting up adequate student laboratories which include at least a basic minimal set of research devices is becoming prohibitively expensive.

The institute have doesn't the funds necessary to set up research laboratories. A possible solution is through the increased use of shared research and virtual facilities; although virtual facility must never be allowed to replace teaching on real devices completely, it can be a useful adjunct.

**T2 Low Incentives to Join Academia**

The professionals working in various academic institutions do not get sufficient incentives when compared with professional working in the industries and administration.

Some of the twining plan has been envisaged so far based above SWOT analysis and are given below:

Specialization / Research Area	Twining Institute
Environmental Systems	IIT Delhi
GIS	IIT Roorkee
Structural Engineering	MNNIT Allahabad
Chemical Engineering	IIT Roorkee, HBTU Kanpur
Mechanical Engineering	IIT Kanpur, IIT Delhi
Computer Science & Engineering	MNNIT Allahabad
Electronics & Communication Engineering	MITG Gwalior, MNNIT Allahabad

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

Institute has not carried out any selection process since last six years therefore institute will propose call of application round the year and selection process may be organized two times a year on regular basis.

Institute has a plan to make teaching profession of this institute more lucrative by providing better Promotion schemes, reforming consultancy rule, participation in core governance and equitable opportunities. Institute will also propose open cadre system and frequent selection process for faster promotion opportunities.

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

- This project is owned by BOG; therefore the BOG may fix the responsibilities of authorities to continue the reforms and activities implemented through this activity.
- Seed grant would be given to faculty members after getting assurance of acquiring sponsored research / consultancy project for sustaining their research activities.



- All non-fee IRG will be retained and utilized to sustain the post project activities.
- 2.8 Describe briefly the participation of departments/faculty/students in the IDP preparation.
- IDP was discussed at various levels in the department. Faculty, Staff, Alumni & students were actively involved in this process.
  - Department council meetings were held to discuss various issues. A lot of brainstorming led to the conclusion that departments should focus on developing Centers catering to specific areas with research potential in mind. Members were of the view that the institute should acquire state of art machinery and software for this purpose. It was felt that with these specialized facilities institute will be able to meet the requirement of M Tech & Ph. D. students and will also meet the aspiration/requirement of local industry.
  - It was decided to break the project into different modules. On the basis of the interest expressed by the faculty and their expertise, groups were formed for mutual interaction and framing the proposal of the department. It was decided to make a steering committee (comprising of Head & Profs). This committee will coordinate and monitor the progress of the work and will remove the bottle necks from time to time.

## List of Publication during Last Five Years

Authors	Paper Title	Name of Journal/Proceeding	Vol	Page	ISBN	Year
Dr. Shahna z Ayub	A Neural Network Approach to study the Bandwidth of Microstrip Antenna	International Journal of Advanced Research in Computer Science and Software Engineering	3	64-69	2277128X	2013
Dr. Shahna z Ayub	Dual Strip Antenna Design Using Artificial Neural Network	International Journal of Advanced Research in Computer Science and Software Engineering	3	74-79	2277128X	2014
Dr. Shahna z Ayub	Neural Network Analysis of Rectangular Slot Loaded Patch Antenna for UMTS Applications	International Journal of Advanced Research in Computer Science and Software Engineering	4	723-729	2277128X	2014
Dr. Shahna z Ayub	Reduction of Noise and QRS Detection by using FIR Band Pass Filter	International Journal of Advanced Research in Computer Science and Software Engineering	4	1242-1246	2277128X	2014
Dr. Shahna z Ayub	Design and Development of Pulse Oximeter	Progress in Science in Engineering Research Journal ( PISER)	2		234-6680 (E)	2014
Dr. Shahna z Ayub	Design of slotted Microstrip Antenna having high efficiency and gain	International Journal of Engineering and Technical Research		50-52	2321-0869	2014
Dr. Shahna z Ayub	Bandwidth improvement of Microstrip Patch Antenna for WLAN Application	International Journal of Engineering and Technical Research		44-46	2321-0869	2014
Dr. Shahna z Ayub	Repeated Fractal Structured Antenna for WLAN/ WIMAX & Bluethooth Applications	International Journal of Engineering Research & Technology	3	424-427		2014

Dr. Shahna z Ayub	Bandwidth Enhancement of Micristrip Patch Antenna by slot loading for WLAN/Wimax and Bluetooth Applications	International Journal for Scientific Reserach & Development ( IJSRD)	2	841-843	2321-0613	2014
Dr. Shahna z Ayub	Repeated Plus Shape Slot Fractal Antenna For Wimax/WLAN Application	International Journal for Scientific Reserach & Development ( IJSRD)	2	328-330	2321-0613	2014
Dr. Shahna z Ayub	Design of modified E shaped Microstrip Patch Antenna for WLAN/ WiMAX, C, and S band Applications	International Journal for Scientific Reserach & Development ( IJSRD)	2	697-699	2321-0613	2014
Dr. Shahna z Ayub	Wavelet Based R Peak Detection in ECG Signal Using Matlab	Journal of Basic and Applied Engineering Reserach ISSN	1	101-103	2350-0077	2014
Dr. Shahna z Ayub	Detection of R peak in Electrocardiogram	International Journal of Computer Applications( IJCA) Published by foundation of Computer Science, New York, USA	97	10-13	0975-8887	2014
Dr. Shahna z Ayub	Comparative Analysis of Pulse Oximeter	International Journal of Advanced Technology ( IJATES)	2	478-484	2348-7550	2014
Dr. Shahna z Ayub	Dual Band Triangular Slotted Stacked Microstrip Antenna for Wireless Applications	Central European Journal of Engineering (CEJE), Springer	3	221-225	1896-1541	2013

Dr. Shahna z Ayub	Bandwidth Optimisation of Compact Microstrip Antenna for PCS/DCS/Bluetooth Application	Central European Journal of Engineering (CEJE), Springer	3	281-286	1896-1541,3(4).2014.DOI : 10.2478/s13531-013-0160-3	2014
Dr. Shahna z Ayub	Comparative Analysis And bandwidth Enhancement with Direct Coupled C slotted Microstrip Antenna for dual wide band Applications	Springer International Publishing Switzerland 2015, advances in Intelligent Systems and Computing	328	449-455		2015
Dr. Shahna z Ayub	Dual band Inset feed Microstrip Patch Antenna for mobile communication	IEEE Conference CSNT		51-54		2013
Dr. Shahna z Ayub	Wide band Microstrip Antenna for UMTS/WLAN/WIMAX Application	IEEE Conference CSNT 2013,		47-50		2013
Dr. Shahna z Ayub	Simulation of Individual Potentials of Heart at arms and legs	IEEE Conference CSNT		789-795		2013
Dr. Shahna z Ayub	Enhancing Security by averaging multiple fingerprint images	IEEE Conference CSNT		487-490		2013
Dr. Shahna z Ayub	Design of Digital IIR Filter for noise reduction in ECG signal	IEEE Conference CICN		171-176		2013
Dr. Shahna z Ayub	Design and comparison of Digital filters for removal of baseline wandering from ECG signal	IEEE Conference CICN		186-191		2013

Dr. Shahna z Ayub	Dual band Rectangular and Circular slot loaded Microstrip Antenna for WLAN/GPS/WiMax Applications	IEEE Conference CSNT		45-48		2014
Dr. Shahna z Ayub	Performance Analysis of Microstrip patch Antenna by varying Slot Size for UMTS Applications	IEEE Conference CSNT		1-5		2014
Dr. Shahna z Ayub	Estimation of Blood pressure by using Electrocardiogram ( ECG) and photoplethysmogram ( PPG)	IEEE Conference CSNT				2015
Dr. Shahna z Ayub	Fault Diagnosis of R-C coupled amplifier using slope fault feature and comparison with different neural networks	IEEE Conference CSNT				2015
Dr. Shahna z Ayub	Bandwidth Enhancement using rectangular and circular slotted Microstrip Antenna	National Conference on Globalized Leading Edge Technologies in Engineering (GLETE 2013)		6-8	9789382880844	2013
Dr. Shahna z Ayub	A compact Microstrip Antenna for Bluetooth / WiMAX Applications	National Conference on Globalized Leading Edge Technologies in Engineering (GLETE 2013)		29-31	9789382880844	2013
Dr. Shahna z Ayub	Wideband Design of Microstrip patch Antenna for DCS/PCS applications	Globalized Leading Edge Technologies in Engineering (GLETE 2013)		97-99	9789382880844	2013
Dr. Shahna z Ayub	Double Circular Slootted Microstrip Patch Antenna for wireless applications	Globalized Leading Edge Technologies in Engineering (GLETE 2013)		100-102	9789382880844	2013
Dr. Shahna z Ayub	Triple Band H-Shaped Microstrip Patch Antenna for Wireless Communication Application	National Seminar on Signal and Image Processing (ISSIP 2014)				2014

Dr. Shahna z Ayub	T-Slot Loaded Rectangular Microstrip Patch Antenna for WLAN/WiMAX Application	Advances in Computer Communication and Embedded Systems ( ACCES-II-2014 )				2014
Dr. N. S. Baniwal	Comparison of Conventional and Fuzzy P/PI/PD/PID Controller for Higher Order Non Linear Plant with High Dead Time	International Journal of Scientific and Research Publications	Vol 2, Issue 8	1-5	2250-3153	41122
Dr. N. S. Baniwal	Optimization of multicarrier transmission using genetic algorithm	International Journal of Advanced Research in Electronics and Communication Engineering	vol .2, issue 1	70-72	2278-909X	2013
Dr. N. S. Baniwal	Dual Band H Shaped Rectangular Microstrip Patch Antenna for WLAN/WiMAX/Bluetooth Applications	International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering	Vol .3, Issue 3	8220-8227	2320 – 3765	41699
Dr. N. S. Baniwal	Bandwidth Enhancement by Loading the Rectangular Microstrip Patch Antenna with I-Slot for Broadband Applications	International Journal of Enhanced Research in Science Technology & Engineering	, Vol .3, Issue 1		424-430	41640
Dr. N. S. Baniwal	Bandwidth Enhancement by slot loaded Patch Antenna for GPS/WLAN/WiMAX Applications	International Journal of Advanced Research in Computer and Communication Engineering	Vol .3, Issue 1	5228-5232	2319 – 5940	41640

Dr. N. S. Baniwal	Bandwidth Enhancement by Loading the Rectangular Microstrip Patch Antenna with I-Slot for Broadband Applications	International Journal of Enhanced Research in Science Technology & Engineering	Vol . 3, Issue 1	. 424-430	2319-7463	41640
Dr. N. S. Baniwal	Study of Compensation of Variable Delay in Communication Link using Communication Disturbance Observer (CDOB) and Network Disturbance (ND)	International Journal for Scientific Research & Development	Vol . 2, Issue 09	55-58	2321-0613	2014
Dr. N. S. Baniwal	Effect of Bandwidth Variation of a Low Pass Filter of CDOB for TimeDelay Compensation	International Journal for Scientific Research & Development	Vol . 2, Issue 12	10-13	2321-0613	2015
Dr. N. S. Baniwal	Control of a reverse-osmosis water desalination system using PI Controller	International Journal for Scientific Research & Development			2321-0613	2015
Dr. N. S. Baniwal	Global Solar Energy: A Review	International Electrical Engineering Journal (IEEJ)	Vol . 6	1828-1833	2078-2365	2015
Prof. J. P. Saini	"Computing Modal Dispersion Characteristics of Radially Asymmetric Bragg Fibre,"	International Journal of Engineering Science and Technology, www.ijest-ng.com	02	36-41	ISSN: 2141-2839 (Online); 2141-2820 (Print)	2010

Prof. J. P. Saini	"Abnormality Detection in ECG Using Artificial Neural Networks,"	Electronic Journal of Biomedicine, Spain, English/Spanish/Portuguese	03	47-52	ISSN 1697-090X	2010
Prof. J. P. Saini	"A Review of Energy Efficient Routing Protocols for Mobile Ad Hoc Wireless Networks,"	International Journal of Computer Information Systems	01	36-46	ISSN 2229-5208	2010
Prof. J. P. Saini	"Modal Analysis and Dispersion Curve of Unconventional Bragg Waveguide,"	International Journal of Telecommunications	05	22-25	ISSN: 2042-8839	2010
Prof. J. P. Saini	"Fusion beats extraction from ECG using neural networkbased soft computing techniques,"	Int. Journal of Advances in Applied Science Research CODEN (USA): AASRFC	01	76-83	ISSN 0976-8610	2010
Prof. J. P. Saini	"Performance Analysis of Routing Protocols in Wireless Ad-hoc Network,"	International Journal of Computer Information Systems	01	38-45	ISSN 2229-5208	2010
Prof. J. P. Saini	"Dynamic Path Restoration for New Call Blocking Versus Handoff Call Blocking in Hetrogeneous Network Using Buffers for QoS,"	International Journal of Advanced Computer Science and Applications(IJACSA)	01	22-31	ISSN 2156-5570	2010
Prof. J. P. Saini	"Performance of Hybrid Routing Protocol for Adhoc Network Under Bandwidth Constraints,"	Int.I Journal of Computer Science and Information Security(IJCSIS)	08	90-98	ISSN 1947-5500	2010
Prof. J. P. Saini	"Extraction of Ventricular Premature Beats from ECG using Soft Computing Technique,"	International Journal of Electronics Engineering (IJEE)	02	155-158	ISSN 0973-7383	2010
Prof. J. P. Saini	"Modal Dispersion Characteristics of Different Cross Sectional Optical Waveguides,"	Proceedings of Progress In Electromagnetics Research Symposium (PIERS), Cambridge, USA,	Pr oc	1065-1069		2010



Prof. J. P. Saini	"Analysis of U-Slot Patch Antennas and Phase Array,"	Progress In Electromagnetics Research Symposium (PIERS)	Pr oc			2010
Prof. J. P. Saini	"Dispersion Characteristics of an Optical Fiber With a Core Slightly Flattened on One Side by Galerkin Method,"	Int. Conf. on Computer and Comm. Engg. (ICCCE 2010), Kuala Lumpur, Malaysia	Pr oc			2010
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Prof. J. P. Saini	"Optical Antenna for Optical Wireless Communication,"	National Conference on Electronics, Computers and Communication (NCECC-2010), IETE Chapter MITS Gwalior	Pr oc			2010
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Prof. J. P. Saini	"Soft Computing Technique for ECG Analysis Using Neural Networks,"	Proc. National Conference on Advances in Video, Cyber Learning and Electronics (ADVICE-2010), NITTR, Chandigarh, India	Pr oc			2010

Prof. J. P. Saini	"Modal Characteristic Equation and Dispersion Characteristics for an Elliptical Bragg Waveguide with a Small Number of Claddings,"	Microwave and Optical Technology Letters (MOTL), Wiley Pub, SCI Expanded	53	932-938	ISSN: 1098-2760 (Online); 0895-2477 (Print)	2011
Prof. J. P. Saini	"Analytical Analysis of Sensitivity of Optical Waveguide Sensor,"	International Journal of Engineering Science and Technology, www.ijest-ng.com	03	36-40	ISSN: 2141-2839 (Online); 2141-2820 (Print)	2011
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Prof. J. P. Saini	"A Survey of Multipath Routing in Mobile Ad Hoc Networks"	International Global Journal of Computer Application and Technology	01	11-23	ISSN: 2249-1945	2011
Prof. J. P. Saini	"Possible Innovations: Enhancing the Effectiveness of Communication Techniques in case of Natural Disaster"	Proc. International Conference on Information Technology, Electronics & Communication (ICITEC-2011), Hyderabad,	Pr oc	187- 191		2011
Prof. J. P. Saini	"Performance Assessment of MANET Protocols using NS2 Simulation"	Proc. International Conference on Wireless Networks and Embedded Systems (WECON 2011), Chandigarh	Pr oc	224- 228		2011
Prof. J. P. Saini	"Modal analysis and Characteristics equation of plasma filled Multilayer optical waveguide"	International Conference on innovative science and Engineering Technology (ICISSET-2011) organized by V.V.P. Engineering College, Rajkot, India	Pr oc			2011

Prof. J. P. Saini	"Identification of Abnormalities in ECG using artificial neural networks"	Proc. International Conference on Recent Trends in Engineering, Technology and Management (ICRTETM), BIET, Jhansi	Pr oc	456- 461		2011
Prof. J. P. Saini	"Modeling of microstructure optical fiber"	Proc. International Conference on Recent Trends in Engineering, Technology and Management (ICRTETM), BIET, Jhansi	Pr oc	645- 648		2011
Prof. J. P. Saini	"Birefringence effect of Elliptical 1-D photonic waveguide"	National Conference on Electronic Materials and Applications(NCEMA-11), Jiwaji University, Gwalior	Pr oc			2011
Prof. J. P. Saini	"Wideband Stacked U-Shaped Slot Patch Antenna,"	National Conference on Recent Advances in Electrical Power and Energy System Management (RAEPESM-2011), M.M.M. Engineering College, Gorakhpur	Pr oc	311- 314		2011
Prof. J. P. Saini	"Analytical Analysis of Sensitivity of Optical Waveguide Sensor,"Alka Verma, Y. Prajapati, S. Ayub, J. P. Saini and V. Singh, , pp. 142-145, Mar. 25–26, 2011.	National Conference on Recent Advances in Electrical Power and Energy System Management (RAEPESM-2011), M.M.M. Engineering College, Gorakhpur	Pr oc	142- 145		2011

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Prof. J. P. Saini	"ANN Based Analysis of ECG Signal,"	National Conference on Emerging Trends in Engineering & Technology, NIIT-IETE and S.L.R.T. College of Engineering, Mumbai,	Pr oc			2011
Prof. J. P. Saini	"A Comparative Analysis of Routing Protocols for Mobile Ad-hoc Networks,"	National Conference on Advances in Computer Science and Technology (NCACT-2011), Amity School of Engineering & Technology, Noida	Pr oc			2011
Prof. J. P. Saini	"Yagi Microstrip Patch Antenna for GPS and Mobile Communication,"	International Journal of Electronics and Computer Science Engineering	01	2613- 2617	ISSN 2277-1956	2012
Prof. J. P. Saini	"Quantifiable Analysis of Energy Efficient Clustering Heuristic,"	International Journal of Advanced Computer Science and Applicatons	03	176- 180	ISSN (online) 2156-5570, ISSN (print) 2158-107X	2012

Prof. J. P. Saini	"Uniform Sampling of ECG Waveform of MIT-BIH Normal Sinus Rhythm Database at Desired Intervals,"	International Journal of Computer Applications	50	06-09	ISSN 0975-8887	2012
Prof. J. P. Saini	"GSM Voice Synthesis Using Wavelet Transform,"	International Journal of Engineering and Innovative Technology (IJEIT)	02	324-331	ISSN 2277-3754	2012
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Prof. J. P. Saini	"Enhanced AODV-Backup Routing in Mobile Ad Hoc Networks,"	Journal of Information Systems and Communication	03	60-63	ISSN: 0976-8742 & E-ISSN: 0976-8750	2012
Prof. J. P. Saini	"Compact Triple Band Slotted Microstrip Patch Antenna,"	International Journal of Engineering Science and Technology	04	907-911	ISSN 0975-5462	2012
Prof. J. P. Saini	"A Multi-slotted Wide Microstrip Patch Antenna for Dual Frequency,"	International Journal of Computer Science and Information Technology	03	3523-3525	ISSN 0975-9646	2012
Prof. J. P. Saini	"A Design of H-Shape Slot Loaded Wideband Microstrip Patch Antenna,"	International Journal of Electronics and Computer Science Engineering	01	533-537	ISSN 2277-1956	2012

Prof. J. P. Saini	"Methodologies and Applications of Wireless Mobile Ad-hoc Networks Routing Protocols,"	International Journal of Applied Information Systems	01	5-15	ISSN 2249-0868	2012
Prof. J. P. Saini	"Mobility Metrics Estimation and Categorization for SNET Protocols,"	International Journal of Computer Science	09	276-282	ISSN (Online)1694-0814	2012
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Prof. J. P. Saini	"Dispersion characteristics analysis of wave propagation in hollow clad elliptical waveguide," Y. Prajapati, S. Bajpai, V. Singh and J.P.Saini, ,, <a href="http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=6470085">http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=6470085</a> , Dec.19-21, 2012.	Proc. International Conference on Emerging Technology Trends in Electronics, Communication and Networking (ET2ECN), Sardar Vallabhbhai National Institute of Technology, Surat, India	Pr oc		Print ISBN 978-1-4673-1628--6	2012
Prof. J. P. Saini	"Symmetrical p-shaped slots loaded microstrip patch antenna for wideband applications,"	Proc. International Conference on Emerging Technology Trends in Electronics, Communication and Networking (ET2ECN), Sardar Vallabhbhai National Institute of Technology, Surat, India	Pr oc		Print ISBN 978-1-4673-1628--6	2012

Prof. J. P. Saini	"Design of a Microstrip Line Fed Slotted Patch Antenna for Wideband Communications,"	Proc.3rd IEEE International Conference on Computer and Communication Technology, MNNIT, Allahabad, India	Pr oc	178- 182	Print ISBN 978-1-4673-3149-4	2012
Prof. J. P. Saini	"Bandwidth Enhancement for Microstrip Patch Antenna with Microstrip Line Feed,"	Proc.3rd IEEEInternational Conference on Computer and Communication Technology, MNNIT, Allahabad, India	Pr oc	183- 185	Print ISBN 978-1-4673-3149-4	2012
Prof. J. P. Saini	Comparison of Different Digital Filters for QRS Complex Extraction from Electro-cardiogram,"	Proc. 4th IEEEInternational Conference on Computational Intelligence and Communication Networks (CICN), GLA, Mathura, India	Pr oc	276- 282	Print ISBN: 978-1-4673-2981-1	2012
Prof. J. P. Saini	Extracting Samples as Text from ECG Strips for ECG Analysis Purpose,"	Proc. 4th IEEEInternational Conference on Computational Intelligence and Communication Networks (CICN), GLA, Mathura, India	Pr oc	317- 321	Print ISBN: 978-1-4673-2981-1	2012
Prof. J. P. Saini	"Dispersion Characteristics of metamaterial based planar waveguide,"	Proc. International Conference on Communications & Electronics (ICCE-2012), KIET, Ghaziabad, India	Pr oc			2012
Prof. J. P. Saini	"Metamaterial based optical Surface plasmon resonance sensor,"	International Conference On Communications & Electronics (ICCE-2012) organized by Krishna Institute of Engineering and Technology (KIET), Ghaziabad, India	Pr oc			2012



Prof. J. P. Saini	"Shifting of modes for M- type triple- clad fiber,"	International Conference on International Conference On Communications & Electronics (ICCE-2012) organized by Krishna Institute of Engineering and Technology (KIET), Ghaziabad, India,	Pr oc			2012
Prof. J. P. Saini	Electromagnetic Wave Propagation in an Optical Fiber with a Core Slightly Flattened on One Side using Galerkin Method,"	National Conference on Advances in Computer Communication & Embedded Systems (ACCESS-2012), M.M.M. Engineering College, Gorakhpur	Pr oc	114- 117		2012
Prof. J. P. Saini	"Design of double-U Microstrip Antenna over Square Patch for Mobile, WiMAX Applications,"	National Conference on Advances in Computer Communication & Embedded Systems (ACCESS-2012), M.M.M. Engineering College, Gorakhpur	Pr oc	145- 146		2012
Prof. J. P. Saini	"Slotted Wide-Band Microstrip Patch Antenna,"	National Conference on Advances in Computer Communication & Embedded Systems (ACCESS-2012), M.M.M. Engineering College, Gorakhpur	Pr oc	162- 167		2012

Prof. J. P. Saini	"Design of Slotted Ground Plane Micro Strip Patch Antenna with Stripline Feed for Wireless Communication,"	National Conference on Advances in Computer Communication & Embedded Systems (ACCESS-2012), M.M.M. Engineering College, Gorakhpur	Proc	114-117		2012
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Prof. J. P. Saini	"Analysis of dispersion relation of the elliptical dielectric waveguides having M-type refractive index profile,"	ELSEVIER, Science Direct-OPTIK, International Journal for Light and Electron Optics (OPTIK), Germany	124	1736-1740	ISSN: 0030-4026	2013
Prof. J. P. Saini	"Wireless Ad hoc Network Simulators: Analysis of Characteristic Features, Scalability, Effectiveness and Limitations,"	International Journal of Applied Information Systems	5	17-22	ISSN 2249-0868	2013
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Prof. J. P. Saini	"Design of Double-Spiral Microstrip Antenna Over a Rectangular Patch for Mobile and Wi-Max Application," S. K.Verma, D. K. Srivastava, J.P.Saini and D.S.Chuhan, , , pp. 227-228, April 06-08, 2013.	Proc. World Conference on Advances in Communication and Control, DIT University Dehradun, India, Atlantis Press	Pr oc	227- 228	ISBN 978-90-78677-66-6, ISSN 1951-6851	2013
Prof. J. P. Saini	"Design And Analysis Of Dual Frequency Band E-Shaped Microstrip Patch Antenna,"	Proc. World Conference on Advances in Communication and Control, DIT University Dehradun, India, Atlantis Press	Pr oc	506- 511	ISBN 978-90-78677-66-6, ISSN 1951-6851	2013
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Prof. J. P. Saini	"Enhancement of single mode operation coaxial waveguide using DB boundary conditions,"	International Journal of Infrared Physics & Technology, Elsevier pub. ScienceDirect, SCI	67	462- 466	ISSN: 1350-4495	2014

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Prof. J. P. Saini	Enhancement of effective area of bragg waveguide using plasma for communication	Microwave and Optical Technology Letters (MOTL), Wiley Pub, SCI Expanded	57	2491-2496	ISSN: 1098-2760 (Electronic); 0895-2477 (Print)	2015

Prof. J. P. Saini	Sensitivity enhancement of surface plasmon resonance sensor based on graphene–MoS2 hybrid structure with TiO2–SiO2 composite layer	International Journal of Applied Physics A: Materials Science and Processing, Springer pub. SCI	First Online: 25 August, 20 15	1-9	ISSN: 0947-8396 (print), 1432-0630 (Electronic version)	2015
Prof. J. P. Saini	Polarization independent broadband metamaterial absorber based on tapered helical structure	International Journal of Optics Communications, Elsevier pub. ScienceDirect, SCI	35 6 (20 15)	565- 570	ISSN: 0030-4018	2015
Prof. J. P. Saini	Sensitivity estimation of metamaterial loaded planar waveguide",	International Journal of Optical and Quantum Electronics, Springer pub, SCI	47	2277- 2287	ISSN: 0306-8919 (Print) 1572-817X (Electronic Version)	2015
Prof. J. P. Saini	"Performance of graphene–MoS2 based surface plasmon resonance sensor using Silicon layer,"	International Journal of Optical and Quantum Electronics, Springer pub. SCI	First Online: 25 July, 20	1-13	ISSN: 0306-8919 (print), ISSN: 1572-817X (Online)	2015

			15			
Prof. J. P. Saini	"Modal Analysis and Dispersion Curves of an Elliptical W-type Single Mode Fibre,"	International Journal of Optics and Spectroscopy, Springer pub. SCI,	11 8	821- 828	ISSN: 0030-400X (print), ISSN: 1562-6911 (Electronic)	2015
Prof. J. P. Saini	"Sensitivity enhancement of metal clad planar waveguide sensor using metamaterial layer as a guiding layer"	International Journal for Light and Electron Optics (OPTIK), Elsevier Pub., Germany, SCI	12 6	1372- 1376	ISSN 0030-4026	2015
Prof. J. P. Saini	"Comprehensive study of reverse index waveguide based sensor with metamaterial as a guideing layer,"	International Journal of Optics Communications, Elsevier pub. ScienceDirect, SCI	34 8	71-76	ISSN: 0030-4018 (nprint)	2015

Prof. J. P. Saini	Design of a wideband gap-coupled modified square fractal antenna	International Journal of Computational Electronics, Springer Link Pub., SCI Expanded	15	1 to 9	ISSN:1569-8025 (Print) 1572-8137 (Online)	30-09-2015
Prof. J. P. Saini	Design of a wideband gap-coupled modified square fractal antenna	International Journal of Computational Electronics, Springer Link Pub., SCI Expanded	15	1 to 9	ISSN:1569-8025 (Print) 1572-8137 (Online)	30-09-2015
Prof. J. P. Saini	Metal Clad Waveguide Sensor with Metamaterial Layer for Refractometric Sensing Application	International Journal of Nanoelectronics and Optoelectronics, American Scientific, DOI: <a href="http://dx.doi.org/10.1166/jno.2015.1834">http://dx.doi.org/10.1166/jno.2015.1834</a>	10	749-754	ISSN: 1555-130X (Print), 1555-1318 (Online)	December 2015
Prof. J. P. Saini	Resolution enhancement of optical surface plasmon resonance sensor using metamaterial	International Journal of Photonic Sensors, Springer Link pub., DOI: 10.1007/s13320-015-0269-5	First online		ISSN: 1674-9251 (Print) 2190-7439 (Online)	03.09.2015
A. K. Padap	Ultrafine-Grained HSLA Steel Processed using MAF: Dry sliding Wear and Corrosion Behaviour	Materials Science Forum	710	276-281	1662-9752	2012
A. K. Padap	Microstructural evolution and mechanical behaviour of warm multi-axially forged HSLA steel	J Mater Sci	47	7894-7900	1573-4803	41018
A. K. Padap	Dry sliding wear behavior of ultrafine-grained mild steel processed using multi axial forging	Chemistry for Sustainable Development: Springer Book Chapter	Chapter 14	219	978-90-481-8649-5	2012



A. K. Padap	Dry sliding wear of uniaxially compressed (AA6063) Al alloy	Proceeding of ICMEETS 2014 organised by MANIT-Bhopal	Vol 1 part 2	482-488	978-93-83083-45-9	Jan29-31 2014
A. K. Padap	Uniaxial Compression of Al Alloy: Mechanical and Dry Sliding Wear Behaviour	Proceeding of ICAT14, Technology Letters, organised NIT Calicut Kerla		92	Technology Letters CART	21-24 Feb2014
A. K. Padap	Simultaneous adsorption of nitrogenous heterocyclic compounds by granular activated carbon: parameter optimization and multicomponent isotherm modeling	RSC Advances	4(75)	39732 - 39742	DOI: 10.1039/C4RA06395C	2014
A. K. Padap	Comparative studies on adsorptive removal of indole by granular activated carbon and bagasse fly ash	Environmental Progress & Sustainable Energy	34(2)	492-503	DOI: 10.1002/ep.12025	2015
A. K. Padap	Pressure Drop Prediction for the Flow of Fly Ash Slurries through Pipes at High Concentrations	IJ of FMR	37	295		2012
A. K. Padap	Development of inversion algorithm for dry snow density estimation and its application with ENVISAT-ASAR dual co-polarization data	Geo-Carto International, Taylor & Francis,		1		2012
A. K. Padap	Selection of Suitable Site for SEZ in Jhansi Using GPS	Indian Surveyor		88		2012
A. K. Padap	Life Cycle Assessment of Integrated Solid Waste Management System of Delhi" Towards Life Cycle Sustainability Management	Springer	4	267		2012
A. K. Padap	Fuzzy Parametric Programming Model for Integrated Solid Waste Management under Uncertainty	Journal of Environmental Engineering, ASCE,	131	69		2012
A. K. Padap	Analysis of circular elastic plate resting on Pasternak foundation by strain energy approach. Geotechnical and Geological Engineering,	International Journal, The Netherlands	29	613	1573-1529	2012





Faculty Members attended Short Term Course/Training/Workshop during Last Five Years

<u>Training Name</u>	<u>Faculty</u>	<u>From</u>	<u>To</u>	<u>Place</u>
Image Processing	Dr. R. N Verma	08/06/2015	12/06/2015	NIT Kurukshetra
Advance aerospace material	Dr. A. K. Padap	01/06/2015	05/06/2015	IIT Roorke
	Dr. S K Rajpoot	01/06/2015	05/06/2015	IIT Roorke
Digital Communication and network	Dr. Shahnaz Ayub	04/12/2014	06/12/2014	IIT Kanpur
Curriculum Review workshop	Dr. D. C. Dhubkarya	15/06/2015	16/06/2015	IET Lucknow
	Dr. Mahendra Kumar	15/06/2015	16/06/2015	IET Lucknow
	Dr. Deepak Nagariya	15/06/2015	16/06/2015	IET Lucknow
Mechanics School	Dr. Vijay Verma	20/02/2015	25/02/2015	IIT Kanpur
Micro Manufacturing	Dr A K Padap	31/08/2015	04/09/2015	IIT Kanpur
	Dr. Tarun Soota	31/08/2015	04/09/2015	IIT Kanpur
	Dr. Vijay Verma	31/08/2015	04/09/2015	IIT Kanpur
Multi Process Parameter optimization of dis sinking	Dr. Vijay Verma	14/03/2015	15/03/2015	GRIET Hyd
Research Methodology and application of SPSS in multifunction	Dr. Suman Yadav	04/01/2015	08/01/2015	MANIT Bhopal
	Dr. P K Srivastava	04/01/2015	08/01/2015	MANIT Bhopal
	Dr. A. K. Srivastava	04/01/2015	08/01/2015	MANIT Bhopal
	Dr. Sudeep Yadav	04/01/2015	08/01/2015	MANIT Bhopal
Structure and Characterization of Material	Dr. Sanjay Agarwal	21/12/2014	26/12/2014	IIT Kanpur
	Dr. A.K Padap	21/12/2014	26/12/2014	IIT Kanpur
STTP on Structural Integrity	Dr. Vijay Verma	16/06/2014	20/06/2014	BIET Jhansi
Faculty Development Program	Dr. T. P. Singh	24/08/2015	25/08/2015	Pravara Rural Engg. Clg, Loni Ahmednagar
Formulation of Research & Development for Scientist & Technologist	Dr. Shahnaz Ayub	07/09/2015	10/09/2015	Hydrabad
Short Term Course	Dr. Suman Yadav	02/11/2015	06/11/2015	NITTTR, Chandigarh

Environmental Friendly agriculture & Horticulture in planning of smart city	Dr. Ekta Pandey	12/12/2015	14/12/2015	MANIT, Bhopal
Decision making model in operations & SCM	Dr. Tarun Soota	15/02/2016	19/02/2016	IIT Delhi
Course on Computational Fluid Dynamics	Dr. Praveen K Srivastava	22/02/2016	26/02/2016	IIT Roorkee
Medical Imaging- Techniques and image processing workshop 2016	Dr. Shahnaz Ayub	25/03/2016	27/03/2016	IIT Delhi
STC " Nanotechnology Development & Challenges"	Dr. Ekta Pandey	16/05/2016	20/05/2016	NITTTR Chandigarh
STC " FPGA Based Digital System Design"	Dr. N. S Beniwal	23/05/2016	27/05/2016	NITTTR Chandigarh
STC " FPGA Based Digital System Design"	Dr. D. K. Srivastava	23/05/2016	27/05/2016	NITTTR Chandigarh
Workshop on " Uncertainty Measurement"	Dr. P. K. Srivastava Dr. Suman Yadav Dr. A. K. Nigam	30/05/2016	31/05/2016	Engineering Staff College, Hyderabad
STC on "Thermal Sprayed Coating & Composites"	Er. Ajay Suryavanshi	13/06/2016	20/06/2016	MNNIT, Allahabad
FDP" USE of ICT in Eduaction for online and blended learning	Dr. Shannaz Ayub	02/05/2016 14 May 4 June 25 June	10/07/2016 15 May 5 June 26 June	Hindustan Insitute of Technology & ManagemnetIT M Agra
STC" Thermal Sprayed Coating and Composites: Science Engineering and Applications	Narendra Kumar	20/06/2016	01/07/2016	MNNIT Allahabad
STC "Advanced Numerical Methods in Engg."	Dr. Praveen Kumar Srivastava Dr. Suman Yadav	25/07/2016	29/07/2016	NITTTR, Chandigarh

FDP" Renewable Energy and Integration with Grid "	Dr. N. S. Beniwal Dr. D. K. Srivastava	29/08/2016	02/09/2016	Engineering Staff College of India, Hyderabad
STC on "Operation & Supply Chain Management"	Dr. Tarun Soota	05/09/2016	09/09/2016	Dr. B. R. Ambedkar NIT, Jalandhar

Faculty Members attended Conference

<u>Conference Name</u>	<u>Faculty</u>	<u>From</u>	<u>To</u>	<u>Place</u>
International Conference(IHMTC-2015)	Dr. Sanjay Agarwal	17/12/2015	20/12/2015	Thiruvananthapuram, Kerala
National Conference (NCMLS-2016)	Dr. Ekta Pandey	11/04/16	12/04/2016	Faridcoat Punjab
International Conference on Advancements and recent innovations in Mechanical Engineering	Er. Ajay Suryavanshi	15/04/2016	16/04/2016	I.T.S. Engg. College, Greater Noida
International Conference on Science Emerging Scenario & Future Challenge (SESFC 2016)	Dr. Vimal Kishore Shukla	11/06/2016	12/06/2016	Dharamshala (H.P.)
AIMTDR-2016 Conference "All India Manufacturing Design and Research Conference"	Dr. Sanjay Agarwal	16/12/2016	18/12/2016	College of Engineering, Pune
International Conference "Environment and agriculture in the UN Sustainable development goals"	Dr. Ekta Pandey	17/12/2016	19/12/2016	MANIT Bhopal

Staff Members attended Training Program

<u>Program Name</u>	<u>Staff Member</u>	<u>From</u>	<u>To</u>	<u>Place</u>
Staff Development Program "Training Program for Administrator & Librarian"	Sh Rajesh Kumar Ahirwar	17/08/2016	22/08/2016	IIM, Raipur
Managerial Effectiveness Enhancement Program	Dr. D. P. Singh Sh. A. K. Yadav Sh. Puspendra Singh Sh. Sushil Kumar Sh. Y. K. Dwivedi Sh. Indrapal Singh Sh. Manoj Kr. Srivastava Sh. S. N. Soni Sh. A. K. Ahirwar Sh. Santosh Kumar	22/08/2016	24/08/2016	SPFU, Lucknow
Staff Development Program "Skills of Success Personal & Professional Enrichment"	Sh Prem Kumar Sh B.N. Singh Sh Suresh Kumar Sh Devendra Dwivedi	22/09/2016	24/09/2016	SPFU, Lucknow



Faculty Members attended Management Capacity Development Program

Management Capacity Enhancement for Administration	Dr. Suman Yadav	19/08/2014	23/08/2014	IIT Lucknow
	Dr. A K Verma	19/08/2014	23/08/2014	IIT Lucknow
	Dr. A. K. Nigam	19/08/2014	23/08/2014	IIT Lucknow
	Dr. Deepak Nagariya	19/08/2014	23/08/2014	IIT Lucknow
	Dr. Shahnaz Ayub	19/08/2014	23/08/2014	IIT Lucknow
	Dr. N. S. Beniwal	19/08/2014	23/08/2014	IIT Lucknow
Management Capacity Enhancement Program for Administration	Dr. R. N Verma	16/11/2015	20/11/2015	IIM Lucknow
	Dr. T. P. Singh	16/11/2015	20/11/2015	IIM Lucknow

**LIST OF EQUIPMENTS PROPOSED FOR PROCUREMENT UNDER TEQIPIII****ELECTRONICS & COMMUNICATION ENGG DEPTT**

S.No.	EQUIPMENTS	APPROXIMATE COST
1.	Microwave Power Meter	2.0 Lacs
2.	Computers (50)	30.0 Lacs
3.	UPS 5KVA(02)	10.0 Lacs
4.	XEROX M/C cum Printer	2.0 Lacs
5.	Laser Printers (10)	2.0 Lacs
6.	AC (05)	4.0 Lacs

**Department of Civil Engineering**

S.No.	EQUIPMENTS	APPROXIMATE COST
1.	GPS (20Nos.)	7.00 Lacs
2.	Total Station (4Nos.)	22.00 Lacs
3.	Solar UPS 5KVA(02)	10.0 Lacs
4.	Stereo Pair, Digital Topo-sheet, RS Data	2.0 Lacs
5.	Laser Printers (3)	1.0 Lacs
6.	AC (05)	4.0 Lacs
7.	NISA software	6.00 Lacs
8.	MS Project Software	4.50 Lacs

**Department of Mechanical Engineering**

<b>S. No.</b>	<b>Name of Equipments</b>	<b>Quantity</b>	<b>Cost in Rs. (Lacs)</b>
1.	Computerized engine test set-up for variable compression ratio multifuel engine	01	20.00
2.	Vertical centrifugal casting furnace with bottom pouring arrangement for Aluminum/Alloy	01	4.00
3	PID control Muffle furnace	01	1.00
4	For computational analysis – CFD, CFX , Lindo software	01	16.50
5	Simultaneous Thermal Analysis - STA (TGA/DSC) for metals/alloys apparatus	01	10.00
6	<ul style="list-style-type: none"> <li>i) Hot air oven with PDI control 95L</li> <li>ii) Vacuum pump (displacement 50L/min)</li> <li>iii) Ultra Sonic Probe Sonicator 50-500ml</li> <li>iv) Hot plate magnetic stirrer ceramic coated 2-3L</li> <li>v) Analytical balance 0.1 mg</li> <li>vi) Desiccator vacuum 250mm</li> <li>vii) Ultra sonic cleaning bath 2.0L</li> </ul>	<ul style="list-style-type: none"> <li>01</li> <li>01</li> <li>01</li> <li>01</li> <li>01</li> <li>01</li> <li>01</li> </ul>	6.50
7	Surface roughness measuring instrument	01	15.00

**Department of Information Technology**

**COMPUTER ORGANIZATION LAB**

Sr No.	Kit Name	Proposed Specification	Qty	Approximate Cost (RS)
1	<b>Digital Trainer Kit</b>	<p>Model name : Micro Lab II with three Bread Board.</p> <ol style="list-style-type: none"> <li>1. Description : Universal Electronics Trainer With Wooden Box With Detachable Wooden Dust Cover.</li> <li>2. TTL / CMOS Compatible logic level inputs.</li> <li>3. Logic HIGH and LOW are displayed by dual color LED.indication on LED:High = RED: LOW=GREEN</li> <li>4. Facility for single pulse generation by a push button switch.</li> <li>5. Eight logic switch to provide LOW , Logic HIGH logic.</li> <li>6. One seven segment display with BCD inputs.</li> <li>7. Capable of accepting wire diameters from 0.3 to 0.8.</li> <li>8. The system requires Power Supply : Input : 180V to 250 V AC 50 Hz</li> </ol> <p align="center">Output</p> <ol style="list-style-type: none"> <li>I. 5 Volt <math>\pm</math> 3 % @ 600 mA Protection : Over load trip (reset by power off 30 Sec.)</li> <li>II. <math>\pm</math>15V <math>\pm</math> 3 % @ 200mA Protection: Constant current on over load.</li> <li>III. Variable 0 to 30 Volt @ 100 mA Protection :</li> </ol>	10	35000/-

		<p>Constant current on over load.</p> <p>IV. A.C. 12V-CT-12V @ 200mA</p> <p>9. <b>Clock Generation :</b> Output: TTL (Normally low) /TTL bar (normally high),Fan out : 10 TTL each.</p> <p>10. Protection Short circuit to any voltage on volt and auto change on wrong connection.</p>		
2	<b>Bread Board and IC based Lab</b>	<p>1. AND GATE – 7408</p> <p>2. OR GATE – 7432</p> <p>3. NAND GATE – 7400</p> <p>4. XOR GATE – 7486</p> <p>5. NOR GATE – 7402</p> <p>6. NOT GATE – 7404</p> <p>7. SHIFT REGISTER – 74164</p> <p>8. ADDER IC – 7483</p> <p>9. ASYNCHRONOUS COUNTER – 7493</p> <p>10. SYNCHRONOUS COUNTER - 74193</p>	25	20000/-
3	<b>PC Trainer Kit</b>	PC Trainer Kit depicting complete architecture of a desktop PC	01	25000/-
4	<b>Trainer Kits for Combinational and Sequential Circuits</b>	Trainer Kits for Half Adder, Full Adder, Counters	01	20000/-
			100000/-	

### COMPUTER LAB 1

Sr No.	Name	Proposed Specification	Qty	Approximate Cost (Rs)
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1	Rack Server	<ol style="list-style-type: none"> <li>1. One Intel Xeon E7-8893 v2 (3.4GHz/6-core/37.5MB/8.0GT-s QPI/155W. Server should provide an intelligent socket that would ease the installation of CPU to avoid errors caused by mis-inserting processors during install or upgrade.</li> <li>2. The server should have up to 8 front-accessible, hot-swappable, SAS , SATA or SSD drives loaded with 3x600GB SAS HDD with at least 10K RPM.</li> <li>3. The Optional server RAID controller should support the following configurations RAID 0, 1, 5, 6, 10 , 50 and 60 support.</li> <li>4. Should have at least 16 DIMM slots and scalable up to 512 GB memory with the2 GB memory module. The server should be populated with 128 GB memory.</li> <li>5. Support for advanced memory redundant technologies like Advanced error-correcting code (ECC) and memory mirroring.</li> <li>6. Should have 2 * 1 GbE LAN on Motherboard ( LOM ) for network connectivity Should have 2*8 Gb FC ports for SAN connectivity.</li> <li>7. Each server should offer 2 PCI Express (PCIe) 3.0 slots.</li> <li>8. The integrated management controller should support web user interface for server management; remote keyboard, video, and mouse (KVM); virtual media; and administration with Virtual media support for remote KVM and CD and DVD drives as if local.</li> <li>9. Should have the following ports for server connectivity 1serial port 2to 5USB ports 1VGA video port</li> <li>10. Supports hot swappable redundant fans.</li> <li>11. Supports hot swappable redundant power supplies.</li> <li>12. Operating Temperature support from 41 to 104°F.</li> <li>13. Operating Humidity from 10 to 90% noncondensing.</li> <li>14. Server should be provided with RHEL 6.4 with L1/2/3 support and should support Windows 2008, 2012, RHEL6.</li> <li>15. KVM switch &amp; LCD console :1U Rack mountable 17” LCD console with touchpad &amp; Keyboard(106 key) 8port KVM switch option 2 connect USB keyboard &amp; mouse.</li> <li>16. 19” 42U OEM rack with required accessories and PDUs (PDU Indian standard).</li> <li>17. 3 year warranty (24*7)</li> </ol>	1	320,000/-
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2.	<b>Desktop PC</b>	<ol style="list-style-type: none"> <li>1. <b>Processor-</b> Intel® Core™ i7-6785R with Intel Iris Pro Graphics 580 (3.9 GHz, 8 MB cache, 4 cores)</li> <li>2. <b>Chipset-</b>Intel® Z170 Express chipset.</li> <li>3. <b>Memory-</b>8 GB RAM DDR3 DDR3 non-ECC Up to 1600 MT/s Memory Expandable up to 32 GB DDR3 4 DIMM.</li> <li>4. <b>Hard Disk Drive &amp; controller-</b>1TB, 7200 rpm, SATA 6.0 Gb/s, SMART IV, 3.5”.</li> <li>5. <b>Optical drive-</b> Super Multi DVD Writer.</li> <li>6. <b>Graphics card-</b> Integrated Intel® HD Graphics.</li> <li>7. <b>Ethernet-</b> Intel I217LM Gigabit Network Connection.</li> <li>8. <b>Ports/slots-</b>4 USB 3.0,6 USB 2.0,1 serial;2 PS/2,1 VGA,2 DisplayPort,1 audio in,1 audio out,1 RJ-45,1 headphone,1 microphone (Optional: 1 serial; 1 parallel),External: (2) 5.25”, (1) 3.5”,Internal: (2) 3.5”,(1) PCI Express x16 (3) PCI Express x1.</li> <li>9. <b>Audio-</b> HD audio with Realtek ALC221 codec; DTS Studio Sound audio management technology; Microphone and headphone front ports (3.5mm); Line-out and Line-In rear Ports (3.5mm); Multi-streaming capable; Internal speaker (standard).</li> <li>10. <b>Form factor-</b> Microtower (MT).</li> <li>11. <b>Power supply-</b>320W standard efficiency, 92% efficient, active PFC.</li> <li>12. <b>Keyboard-</b> USB 104 keys keyboard (Same make as PC).</li> <li>13. <b>Mouse-</b> USB 2 Button optical Scroll Mouse (Same make as PC).</li> <li>14. <b>Operating System-</b> Preinstalled: Genuine Windows® 10 Professional.</li> <li>15. <b>Security management-</b> Trusted Platform Module (TPM) 1.2</li> <li>16. <b>Compliance &amp; certification-</b> UL, FCC and Win certification &amp; Linux (Redhat/SuSe Certification)Energy Star , EPEAT GOLD , BFR/PVC Free chassis and internal components.</li> <li>17. <b>Display-</b>18.5" LCD TCO 06 certified (Same make as PC).</li> <li>18. <b>Warranty-</b> 3 year warranty(24*7)</li> </ol>	<b>60</b>	<b>3,600,000/-</b>
3.	<b>Online UPS 20KVA With 1.00 Hrs Backup(3/1-20k Combo)</b>	<p><b>Input:</b> 20000VA/8000Watt. 110VAC-276VAC Depends on load for single phase input. 190VAC-478VAC Depend on load level for three phase input.</p> <p><b>Output:</b></p>	<b>01</b>	<b>300,000/-</b>



		<p>Voltage-200/208/220/230/240VAC  Voltage Regulation: &lt;1%  Frequency(synchronized range)54hz-66hz  Frequency (battery mode)50/60+_0.05hz.  <b>Efficiency:</b>  Line mode &gt;93% @full load and battery full charged  Bat mode &gt;93% @full load and 12vdc/battery  Eco mode &gt; 97% @full load and battery fully charged  <b>Battery:</b>  Number of Batteries 24 pcs.  Battery type: 12V  Charging current 4A(expandable)  Rated battery voltage 288VDC.  <b>Indicator:</b>  LCD load level/ battery level/ battery mode/ ac mode/  bypass mode.  <b>Audible alarm:</b>  <b>Interface:</b> USB/RS232 software support windows  family, linux, sun Solaris, IBM aix, Compaq true64,  SGIIRIX, FreeBSD,HP-ux and MAC.  External slot SNMP/AS400/Realy card  EPO Emergency power off.</p>		
4	<b>Network Laser Jet Printer</b>	<ul style="list-style-type: none"> <li>• Technology: Laser</li> <li>• Resolution: 1200*1200 DPI</li> <li>• Speed:35 PPM</li> <li>• Paper Size: A4, A3, A5, B4, B5.</li> <li>• Network: LAN,USB 2.0</li> <li>• Consumption(Stand By):2.5 Watts</li> <li>• Consumption(Active):710 Watts</li> <li>• Memory: 256 MB</li> <li>• Function: Single Function</li> <li>• Network Enabled: Yes</li> </ul>	02	90,000/-
5.	<b>Table</b>	Computer Table	50	90000/-
6.	<b>Chair</b>	Computer Chair	50	80000/-

**Department of Computer Science**

<b>Sr No.</b>	<b>Name</b>	<b>Proposed Specification</b>	<b>Qty</b>	<b>Approximate Cost(in Rs)</b>
<b>1.</b>	<b>Rack Server</b>	<p><b>10.</b> One Intel Xeon (3.4GHz/6-core/37.5MB/8.0GT-s QPI/155W or Higher.</p> <p><b>11.</b> The server should have up to 8 front-accessible, hot-swappable, SAS , SATA or SSD drives loaded with 3x600GB SAS HDD with at least 10K RPM.</p> <p><b>12.</b> The Optional server RAID controller should support the following configurations RAID 0, 1, 5, 6, 10 , 50 and 60 support.</p> <p><b>13.</b> Should have at least 16 DIMM slots and scalable up to 512 GB memory with the 2 GB memory module. The server should be populated with 128 GB memory.</p> <p><b>14.</b> Support for advanced memory redundant technologies like Advanced error-correcting code (ECC) and memory mirroring.</p> <p><b>15.</b> Should have 2 * 1 GbE LAN on Motherboard ( LOM ) for network connectivity Should have 2*8 Gb FC ports for SAN connectivity.</p> <p><b>16.</b> KVM switch &amp; LCD console :1U Rack mountable 17” LCD console with touchpad &amp; Keyboard(106 key) 8port KVM switch option 2 connect USB keyboard &amp; mouse.</p> <p><b>17.</b> 19” 42U OEM rack with required accessories and PDUs (PDU Indian standard).</p> <p><b>18.</b> 3 year warranty (24*7)</p>	<b>01</b>	<b>400,000/-</b>

2.	<b>Desktop PC</b>	<p><b>19. Processor-</b> Intel Core i7, <b>Chipset-</b> Intel Express chipset, <b>Memory-</b> 8 GB RAM DDR3 non-ECC Up to 1600 MT/s Memory Expandable up to 32 GB DDR3 4 DIMM, <b>Hard Disk Drive &amp; controller-</b> 1TB, 7200 rpm, SATA 6.0 Gb/s, SMART IV, 3.5", <b>Optical drive-</b> Super Multi DVD Writer, <b>Graphics card-</b> Integrated Intel HD Graphics, <b>Power supply-</b> 320W standard efficiency, 92% efficient, active PFC, <b>Keyboard-</b> USB 104 keys keyboard (Same make as PC), <b>Mouse-</b> USB 2 Button optical Scroll Mouse (Same make as PC).</p> <p><b>20. Display-</b> 18.5" LCD TCO 06 certified (Same make as PC).</p> <p><b>21. Warranty-</b> 3 year warranty(24*7)</p>	<b>60</b>	<b>3,600,000/-</b>
3.	<b>UPS</b>	Online UPS 20KVA With 1.00 Hrs Backup	<b>01</b>	<b>300,000/-</b>
4	<b>Printer</b>	Network Laser Jet All in One Printer	<b>04</b>	<b>100,000/-</b>
5.	<b>Computer Tables</b>	Computer Table	<b>60</b>	<b>100000/-</b>
6.	<b>Computer Chairs</b>	Computer Chair	<b>60</b>	<b>100000/-</b>
7.	<b>Air Conditioners</b>	Split Air Conditioner (2 Tons each)	<b>06</b>	<b>400000/-</b>
		<b>TOTAL</b>		<b>5,000,000/-</b>

## Department of Chemical Engineering

S.NO	NAME OF EQUIPMENT	APPROXIMATED COST IN INR
1	BIO-DIESEL PLANT(10L CAPACITY)	7LACS
2	NDIR- CO <sub>2</sub> GAS ANALYSER	75,000
3	CO METER	80,000
4	LABORATORY/DOMESTIC PORTABLE BIO-GAS PLANT	1LACS
5	IMPORTED PORTABLE BIO-GAS ANALYSER INSTRUMENT	6.6 LACS
6	DIGITAL PORTABLE COAL GAS MONITOR	6.5 LACS
7	WATER TESTING KIT	20,000
8	BET SURFACE AREA ANALYSER	10 LACS
9	PORATBLE FATTY ACID TESTER	1 LACS
10	PORATBLE IODINE METER	1 LACS
11	OIL SPECTROPHOTOMETER	1.5 LACS
12	SEMI-MICRO DIGITAL ELECYTRONIC BALANCE	90,000
13	WIND VELOCITY METER/ANEMOMETER	18,000
14	GLASS WATER DISTILLATION	20,000
15	DIGITAL MELTING POINT APPARATUS	50,000
16	DIRECT T.O.C MEASURING SYSTEM	10LACS
17	FTIR ANALYSER	15LACS
18	MICROWAVE	40,000
19	MULTIKIT PARAMETER	1.5 LACS
20	AUTO-CLAVE(10L CAPACITY)	2 LACS
21	MAGNETIC STIRRER	25,000

**Department of Electrical Engineering**

Sr. No.	NAME OF EQUIPMENT	QTY.	ESTIMATED COST(Rs.)
1.	<u>Desktop</u> Genuine Windows® 7 Home Premium 64 Intel® Core™ i7-2600 • 3.4 GHz, DMI 2.5GT/s 4 GB 1333 MHz DDR3 750 GB SATA 3G (7200 rpm) or latest Super Multi SATA Drive and Double Layer supporting Light scribe Technology ATI Radeon HD 5450 (1 GB dedicated) 4/5 USB Port ,DVD Writer, Monitor LCD “17”	40	28,00,000.00
2.	Printer 3-in-1 Printer, Photocopier cum Scanner Make- HP/Samsung	03	60,000.00
3.	Software MATLAB (latest version)	05	7,00,000.00
4.	LABVIEW Software(latest version)	05	800000.00
5.	UPS	02	2000000
6.	LCD Projector with white Screen	01	60,000.00
7.	A.C. (Split)	05	2,50,000.00
8	Digital Storage Oscilloscope Up to 30 MHZ	10	2,50,000.00
	Total ESTIMATED cost(Rs.)		51,20,000.00

## Department of Management Studies

<b>S.no</b>	<b>Component</b>	<b>Qty.</b>	<b>Rate</b>	<b>Approx Amount in RS.</b>
1.	Optimization Software – LINGO (Academic Single User)	1	7,00,000	7,00,000
2.	Crystal Ball (Teacher Suits)	1	3,50,000	3,50,000
3.	Interactive Projector	01	60,000	60,000
4.	Visualizers	01	20,000	20,000
5.	Loud Speakers	04	10,000	40,000
6.	Interactive Pad	01	7,000	7,000
7.	Interactive Pen	01	5,000	5,000
8.	White Boards	01	6,000	6,000
9.	Podium with LED Logo	01	15,000	15,000
10.	15 Computer Systems for Lab + 3 Computer System for office	18	40,000	7,20,000
11.	Amplifier Mixer	01	10,000	10,000
12.	Gooseneck Mic	01	5,000	5,000
13.	Collar Mic	01	5,000	5,000
14.	Hand Held Mic	02	5,000	10,000
15.	Motorized Screen	01	15,000	15,000
16.	UPS (5KVA)	01	50,000	50,000
17.	Chairs	60	4,000	2,40,000
18.	AC + Stabilizers	02	50,000	1,00,000
19.	Printer	01	15,000	15,000
20.	LED TV	01	1,50,000	1,50,000

## Department of Applied Science

### Instruments Required for Physics Lab

S. No.	List of Equipments	Amount
1.	Programmable Muffle furnace	100000
2.	Software for calculating Electronic Structure (a) Quantum wise (b) VASP (c) WIN 2k	1000000 500000 200000
3.	Optical Spectrophotometer	1200000
4.	Differential Scanning Calorimeter (Below room temperature to High Temp.)	1400000
5.	Optical Microscope (1000x)	1400000

### Instruments Required for Chemistry Lab

S. No.	List of Equipments	Amount
1.	FTIR	1500000
2.	Laboratory drying oven	70000
3.	High precision M.P. apparatus	60000
4.	Mestronova software	150000
5.	Water analysis kit	10000
6.	Weather monitoring system	150000
7.	Ultra centrifuge	35000
8.	Soxtech machine	15000
9.	Kjeltec analyser	20000
10.	Analytical Balance	90000
11.	Cyrogenice Freezer	50000
12.	Aminoacid Analyser	20000
13.	Digital melting point app.	50000
14.	Schrodinger software	150000
15.	Chem Draw software	100000

## Budget for Different Project Activities

S.N	Heads	Sub-Heads	Financial Periods					
			I	II	III	IV	V	
1	Procurement of Goods							
		Civil Works (Refurbishment Lecture Theatres)	12.00	12.00	00.00	00.00	00.00	
		Civil Works (Refurbishment Laboratories)	15.00	6.00	0.00	0.00	0.00	
		Library Automation with RFID access and Issue control	5.00	15.00	15.00	0.00	0.00	
		Books, Journals, and E-Resources	38.00	38.00	38.00	38.00	38.00	
		Strengthening of Internet Facilities and WIFI	0.00	20.00	20.00	0.00	0.00	
		Computer Centre	0.00	50.00	0.00	0.00	0.00	
		Implementation of ERP System	20.00	20.00	00.00	0.00	0.00	
		Seed Research Grant to Faculty (50 Faculty@2 Lakhs)	0.00	100.00	0.00	0.00	0.00	
		Departmental UG/PG Laboratories (Rs 50 Lakhs for 7 Engineering Department & Rs 25 Lakh each for Applied Science & MBA)	50.00	100.00	100.00	100.00	50.00	
2	Improvement in Teaching, Learning and Research competence'	PhD / MTech Fellowship	15.00	15.00	15.00	15.00	15.00	
		Twining arrangements with high performing institutions	25.00	25.00	25.00	25.00	25.00	
		Increasing Student employability	10.00	10.00	10.00	10.00	10.00	
		Finishing Schools	5.00	5.00	5.00	5.00	5.00	
		Improving Transition Rate	4.00	4.00	4.00	4.00	4.00	
		Staff Training	5.00	5.00	5.00	5.00	5.00	
		Faculty Training including Management Capacity Development	5.00	5.00	5.00	5.00	5.00	
		Organizing conferences, seminars, training programmes	12.00	12.00	12.00	12.00	12.00	
		For paper presentation in Conference and Publication in Journals	4.00	4.00	4.00	4.00	4.00	
		Industry – Interaction	5.00	5.00	5.00	5.00	5.00	
3	IOC	Incremental Operating Cost	30.00	30.00	30.00	30.00	30.00	

Year I – April 2017-March 2018; Year II – April 2018-March 2019; Year III – April 2019 – March 2020; Year IV: April 2020- March 2021; Year V- April 2021- March 2022;