

THAPAR INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Deemed to be University)

PATIALA

QUALITY MANUAL

TIET/QMS/QM

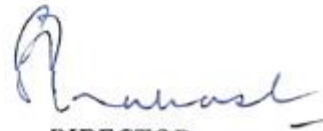
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DIRECTOR

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Director

Amendment Sheet (1)

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1	7.4.2022	4.1	External 1. Admission of the best students 2. Retention of the best students 3. Regulations by statutory bodies 4. Market forces affecting placements 5. Recruitment and retention of the best faculty	External 1. Admission of the best students 2. Regulations by statutory bodies 3. Market forces affecting placements	18	5.1
2	7.4.2022	4.1	Internal 1. Provision of the best Teaching Learning Resources 2. Provision of comfortable and safe Hostel Accommodation 3. Provision of Related infrastructure like sports, medical and other extra-curricular facilities 4. Provision of Training and finishing school for placement 5. Provision for Acclimatization and cohabitation of newly admitted students (Frosh Week)	Internal 1. Provision of the best Teaching Learning Resources 2. Provision of comfortable and safe Hostel Accommodation 3. Provision of Related infrastructure like sports, medical and other extra-curricular facilities 4. Provision of Training and finishing school for placement 5. Provision for Acclimatization and cohabitation of newly admitted students (Frosh Week) 6. Retention of the best students 7. Recruitment and retention of the best faculty	19	5.1

Amendment Sheet(2)

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3	7.4.2022	5.3	Dean of Academic Affairs (DoAA), with additional responsibilities of Controller of Examiner (CoE)	Dean of Academic Affairs (DoAA), in coordination with Controller of Examiner (CoE)	30	5.1
4	7.4.2022	6.1.1	Risks -unfavorable statutory regulations	Risks -changes in statutory regulations	38	5.1
5	7.4.2022	6.2.2	Organization Objectives (Tabular form)	Column added "Responsibility"	41-43	5.1

Amendment Sheet(3)

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Introduction

Profile of the Institute

Thapar Institute of Engineering & Technology (TIET) was established on 8th of October 1956 as an Engineering College named Thapar Institute of Engineering and Technology. It was established as a University in 1985 vide Section 3 of the UGC Act, 1956 under notification # F.9-12/84-U.3. Thapar Institute of Engineering & Technology offers Post-graduate and Undergraduate Programs in Engineering, Science, Management and Social Sciences. At TIET we strive to maintain an environment that encourages scholarly inquiry and research, a spirit of creative independence and a deep commitment to academic excellence. We see our students as unique individuals with different interests and aspirations. The diverse programs and activities aimed at developing quality of mind, ethical standard, social awareness and global perspectives, let the students shape their own TIET experience and grow. Our alumni have excelled in varied fields such as business and industry, administrative and regulatory services, research and education and social and human rights organizations.

The academic units of the Institute are Departments, Schools and Centres. The role of DEPARTMENTS is to organize and conduct undergraduate, postgraduate and doctoral programmes in relevant engineering/science and technological disciplines. The SCHOOLS offer postgraduate and doctoral programmes in relevant areas of specialization. The CENTRES are special Inter-Disciplinary Units serving the Institute as a whole.

As of date, the academic units of the Institute are:

Departments

- i. Department of Biotechnology
- ii. Chemical Engineering Department
- iii. Civil Engineering Department
- iv. Computer Science and Engineering Department
- v. Electrical and Instrumentation Engineering Department
- vi. Electronics and Communication Engineering Department
- vii. Mechanical Engineering Department

Schools

- i. School of Humanities and Social Sciences
- ii. School of Chemistry and Bio chemistry
- iii. School of Mathematics
- iv. School of Physics and Material Sciences
- v. School of Energy and Environment

Centres

- i. Central Library
- ii. Central Workshop
- iii. Centre of Information & Technology Management
- iv. Centre for Industrial Liaison and Placement
- v. Health Centre

Salient features of the degree programmes:

- * Semester system
- * Continuous evaluation of the students' performance
- * Letter grades
- * Course-wise promotion
- * Flexibility to students to select courses and move at an optimum pace suited to their ability, capacity and interest.

Medium of instruction

The medium of instruction at TIET is English.

Quality Management System

0.1 General

The adoption of a quality management system is a strategic decision for an organization that can help to improve its overall performance and provide a sound basis for sustainable development initiatives.

The potential benefits to an organization of implementing a quality management system based on this Documented information are:

- the ability to consistently provide products and services that meet customer and applicable statutory and regulatory requirements;
- facilitating opportunities to enhance customer satisfaction;
- addressing risks and opportunities associated with its context and objectives;
- the ability to demonstrate conformity to specified quality management system requirements.

The quality management system requirements specified in this documented information are complementary to requirements for products and services.

This documented information employs the process approach, which incorporates the Plan-Do-Check-Act (PDCA) cycle and risk-based thinking.

The process approach enables an organization to plan its processes and their interactions.

The PDCA cycle enables an organization to ensure that its processes are adequately resourced and managed, and that opportunity for improvement are determined and acted on.

Risk-based thinking enables an organization to determine the factors that could cause its processes and its quality management system to deviate from the planned results, to put in place preventive controls to minimize negative effects and to make maximum use of opportunities as they arise (see Clause 4).

Consistently meeting requirements and addressing future needs and expectations poses a challenge for organizations in an increasingly dynamic and complex environment. To achieve this objective, the organization might find it necessary to adopt various forms of improvement in addition to correction and continual improvement, such as breakthrough change, innovation and re-organization.

In this documented information, the following verbal forms are used:

- — “shall” indicates a requirement;
- — “should” indicates a recommendation;
- — “may” indicates a permission;
- — “can” indicates a possibility or a capability.

Information marked as “NOTE” is for guidance in understanding or clarifying the associated requirement.

0.2 Quality management principles

This documented information is based on the quality management principles described in ISO 9000. The descriptions include a statement of each principle, a rationale of why the principle is important for the organization, some examples of benefits associated with the principle and examples of typical actions to improve the Institute's performance when applying the principle.

The quality management principles are:

- customer focus;
- leadership;
- engagement of people;
- process approach;
- improvement;
- evidence-based decision making;
- relationship management.

0.3 Process approach

0.3.1 General

This documented information promotes the adoption of a process approach when developing, implementing and improving the effectiveness of a quality management system, to enhance customer satisfaction by meeting customer requirements. Specific requirements considered essential to the adoption of a process approach are included in 4.4.

Understanding and managing interrelated processes as a system contributes to the Institute's effectiveness and efficiency in achieving its intended results. This approach enables the Institute to control the interrelationships and interdependencies among the processes of the system, so that the overall performance of the Institute can be enhanced.

The process approach involves the systematic definition and management of processes, and their interactions, so as to achieve the intended results in accordance with the quality policy and strategic direction of the Institute. Management of the processes and the system as a whole can be achieved using the PDCA cycle (see 0.3.2) with an overall focus on risk-based thinking (see 0.3.3) aimed at taking advantage of opportunities and preventing undesirable results.

The application of the process approach in a quality management system enables:

- understanding and consistency in meeting requirements;
- the consideration of processes in terms of added value;
- the achievement of effective process performance;
- improvement of processes based on evaluation of data and information.

0.3.2 Plan-Do-Check-Act cycle

The PDCA cycle can be applied to all processes and to the quality management system as a whole.

The PDCA cycle can be briefly described as follows:

- **Plan:** establish the objectives of the system and its processes, and the resources needed to deliver results in accordance with customers' requirements and the Institute's policies, and identify and address risks and opportunities;
- **Do:** implement what was planned;
- **Check:** monitor and (where applicable) measure processes and the resulting products and services against policies, objectives, requirements and planned activities, and report the results;
- **Act:** take actions to improve performance, as necessary.

0.3.3 Risk-based thinking

Risk-based thinking (see [Clause 4](#)) is essential for achieving an effective quality management system. The concept of risk-based thinking has been implicit in previous editions of this documented information including, for example, carrying out preventive action to eliminate potential nonconformities, analysing any nonconformities that do occur, and taking action to prevent recurrence that is appropriate for the effects of the nonconformity.

To conform to the requirements of this documented information, an Institute needs to plan and implement actions to address risks and opportunities. Addressing both risks and opportunities establishes a basis for increasing the effectiveness of the quality management system, thereby achieving improved results and preventing negative effects.

Opportunities can arise as a result of a situation favourable to achieving an intended result, for example, a set of circumstances that allow the Institute to attract customers, develop new products and services, reduce waste or improve productivity. Actions to address opportunities can also include consideration of associated risks. Risk is the effect of uncertainty and any such

uncertainty can have positive or negative effects. A positive deviation arising from a risk can provide an opportunity, but not all positive effects of risk result in opportunities.

0.4 Relationship with other management system standards

This documented information enables an Institute to use the process approach, coupled with the PDCA cycle and risk-based thinking, to align or integrate its quality management system with the requirements of other management system standards.

This documented information relates to ISO 9000 and ISO 9004 as follows:

- ISO 9000 *Quality management systems — Fundamentals and vocabulary* provides essential background for the proper understanding and implementation of this documented information;
- ISO documented information 9004 *Managing for the sustained success of an Institute — A quality management approach* provides guidance for Institutes that choose to progress beyond the requirements of this documented information.

This documented information does not include requirements specific to other management systems, such as those for environmental management, occupational health and safety management, or financial management.

1 Scope

This documented information specifies requirements for a quality management system when an Institute:

- needs to demonstrate its ability to consistently provide products and services that meet customer and applicable statutory and regulatory requirements, and
- aims to enhance customer satisfaction through the effective application of the system, including processes for improvement of the system and the assurance of conformity to customer and applicable statutory and regulatory requirements.

All the requirements of this documented information are generic and are intended to be applicable to any Institute, regardless of its type or size, or the products and services it provides.

NOTE 1 In this documented information, the terms “product” or “service” only apply to products and services intended for, or required by, a customer.

NOTE 2 Statutory and regulatory requirements can be expressed as legal requirements.

1.1 Scope of certification

Scope of Certification to ISO 9001 Quality Management System covers all the academic departments, schools and centers of the Institute as well as the support services research, consultancy and testing services, administrative co-curricular and extracurricular activities.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- ISO 9000:2015, Quality management systems — Fundamentals and vocabulary

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9000:2015 apply.

4. Context of the Institute

4.1 Understanding the Institute and its Context

The Institute shall determine the external and internal issues that:

- are relevant to the Institute's purpose and strategic direction;
- and affect its ability to achieve the intended results of its quality management system.

The organisation shall Monitor and review information about these external and internal issues.

Note 1: Issues can include positive and negative factors or conditions for consideration.

Note 2: Consider external issues arising from legal, technological, competitive, market, cultural, social, and economic environments (local, regional, national, or international).

Note 3: Consider internal issues related to Institutional values, culture, knowledge, and performance.

A team of experts in the institute identified, monitored and reviewed the external and internal issues that are relevant to the organization's purpose and strategic direction; and affect its ability to achieve the intended results of its quality management system.

After due deliberations and the same is listed below as:

External

1. Admission of the best students
2. Regulations by statutory bodies
3. Market forces affecting placements

Internal

1. Provision of the best Teaching Learning Resources
2. Provision of comfortable and safe Hostel Accommodation
3. Provision of Related infrastructure like sports, medical and other extra-curricular facilities
4. Provision of Training and finishing school for placement
5. Provision for Acclimatization and cohabitation of newly admitted students (Frosh Week)
6. Retention of the best students
7. Recruitment and retention of the best faculty

4.2 Understanding the Needs and Expectations of Interested Parties

Due to their effect, or potential effect, on your ability to consistently provide products and services that meet customer and applicable statutory and regulatory requirements, the organisation shall determine:

- interested parties that are relevant to the quality management system;
- relevant requirements of these interested parties.

A team of experts in the institute identified the information about the interested parties and their relevant requirements.

After due deliberations and the same is listed below as:

- Student: value addition through outcome based teaching learning process; placement; certification for higher education
- Faculty and Staff: Conducive working and living conditions; Performance based Incentives; Professional Growth
- Potential Employers of Students: Good Quality Students with well-rounded personality
- External Providers: Fairness in dealing and early disposal of monetary matters

4.3 Determining the Scope of the Quality Management System

The Institute shall determine the boundaries and applicability of the quality management system to establish its scope.

When determining the scope, consider:

- external and internal issues (see 4.1);
- requirements of relevant interested parties (see 4.2);
- products and services of Institute.

The organisation shall apply the requirements of ISO 9001 if they are applicable within the determined scope.

Maintain and make available the scope as documented information stating:

- Products and services covered
- Justification for any ISO 9001 requirements determined as not applicable

Conformity to ISO 9001 can only be claimed if the requirements determined as not applicable do not affect your ability or responsibility to ensure the conformity of products and services, and the enhancement of customer satisfaction.

The Scope of Quality Management System covers Activities of Departments of Chemical Engineering, Civil Engineering, Biotechnology, Computer Science & Engineering, Electrical & Instrumentation Engineering, Electronics & Communication Engineering, Mechanical Engineering, Activities of Schools of Chemistry & Biochemistry, Energy and Environment, Humanities & Social Sciences, Mathematics, Physics & Materials Science covering:

- Design, Development, Delivery, Examination and Support Services for Undergraduate courses, Postgraduate courses and Doctoral Programs.
- Consultancy/Testing Services
- Design, Research & Development Activities

4.4 Quality Management System and its Processes

4.4.1 Establish, implement, maintain, and continually improve the quality management system, including the processes needed and their interactions, in accordance with ISO 9001 requirements.

Determine the processes needed for the quality management system and their application throughout the Institute and:

- determine the inputs required and outputs expected from these processes;
- determine the sequence and interaction of these processes;
- determine and apply the criteria and methods (including monitoring, measurements, and related performance indicators) needed to ensure effective operation and control of these processes;
- determine the resources needed for these processes and ensure their availability;
- assign the responsibilities and authorities for these processes;
- address the risks and opportunities in accordance with requirements of 6.1;
- evaluate these processes and implement any changes needed to ensure that these processes achieve their intended results;
- improve the processes and the quality management system.

4.4.2 (a) Maintain documented information (e.g., procedures and work instruction) to support the operation of processes.

(b) Retain documented information (e.g., records) to have confidence that the processes are being carried out as planned.

The documented information is contained in the functional manual of a department/school/centre including the system documented information common to all departments/centres. The functional manual is duly indexed and contains list of associated work instructions and formats for documenting the information to be retained. The documented information has been classified into the following three heads.

- i) Academic documented information (Academic Procedures)
- ii) Departmental documented information (Departmental Procedures)
- iii) System documented information (System Procedures)

5 Leadership

5.1 Leadership and commitment

5.1.1 General

Top management shall demonstrate leadership and commitment with respect to the quality management system by:

- taking accountability for the effectiveness of the quality management system;
- ensuring that the quality policy and quality objectives are established for the quality management system and are compatible with the context and strategic direction of the organisation;
- ensuring the integration of the quality management system requirements into the organisation's business processes;
- promoting the use of the process approach and risk-based thinking;
- ensuring that the resources needed for the quality management system are available;
- communicating the importance of effective quality management and of conforming to the quality management system requirements;
- ensuring that the quality management system achieves its intended results;
- engaging, directing and supporting persons to contribute to the effectiveness of the quality management system;
- promoting improvement;
- supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

5.1.2 Customer focus

Clause 5.1.2 requires that Top Management demonstrate a customer focus, to ensure products and services consistently meet customer requirements.

Top management shall demonstrate leadership and commitment with respect to customer focus by ensuring that:

- customer and applicable statutory and regulatory requirements are determined, understood and consistently met;
- the risks and opportunities that can affect conformity of products and services and the ability to enhance customer satisfaction are determined and addressed;
- the focus on enhancing customer satisfaction is maintained.

The customer in this case is student or the employing industry. The curriculum and the delivery process is designed and transacted in such a way that the requirements of the employing industry are fulfilled. For this the information is collect from the employing offices from time to time. No programme is specially tailor made for the requirements of different students; rather the students have to opt from the existing programmes.

To ensure that the admitted and registered students clearly understand the requirements of their respective programmes and disciplines in order to qualify for the degree, diploma or certificate for which admitted & registered, information brochure is prepared and the students are advised to read them.

The scope includes the selection process and documented information for admission, registration and execution of programmes. Amendments after admissions, if any, are as per the statements given in the Information Brochure.

The short term courses and services being rendered to outside agencies e.g. consultancy, test services etc. are also included in the scope of customer related processes.

The responsibility of the customer related processes lie with the following:

Scope	Responsibility
1. Information Brochure	Registrar
2. Admission & Registration	DOAA
3. Execution of Programmes	HEAD
4. Consultancy & Testing Services	DoSRP & HEAD
5. Health Services	MO
6. Scholarships & Financial Assistance	DOSA
7. On campus hostel accommodation/residence	Coordinating warden
8. Industry Placement	Head CILP

5.2 Policy

5.2.1 Establishing the quality Policy

Top management shall ensure their commitment to quality and that the quality policy:

- Is appropriate to the organisation and ISO implementation
- Includes a commitment to requirements and continual improvement
- Provides a basis for establishing and quality objectives
- Is communicated and understood within the organisation (staff training)
- Is periodically reviewed for suitability

5.2.1.1 Quality Policy

A quality policy has been defined by the Director of the Institute and documented as below:

We, at Thapar Institute of Engineering & Technology, Patiala, are committed to creation, archiving and dissemination of knowledge in Engineering, Science and Technology for service to the humanity. We undertake to develop a high quality, professionally groomed technical and engineering manpower, possessing multifaceted personality, respect for professional and social ethics, national values and the spirit of human emancipation.

Pursuing our commitment through:

- *Ensuring topical and relevant curriculum*
- *Adept delivery mechanism*
- *Intellectual and professional fulfilment of faculty and staff*
- *Quality research in the frontiers of technology*
- *Involvement of all stakeholders in growth and development of the Institute*
- *Continuous augmentation and renewal of infrastructure and facilities*
- *Creation of congenial and conducive work environment*
- *Promotion of team work and proactive participation*

Director

5.2.2 Communicating the Quality Policy

The quality policy shall:

- Be available and be maintained as documented information
- Be communicated, understood and applied within the organisation
- Be available to relevant interested parties as appropriate

The quality policy has been written in the English language. It has been displayed at prominent places in the Institute for exposure to one and all. All the employees of the Institute have been explained the meaning of and commitment to the quality policy. It has been ensured that all employees have clearly understood the policy with regard to its meaning, relevance and their commitment to it. The quality policy is reviewed at the time of management review for its continuing suitability.

5.3 Institutional roles, responsibilities and authorities

Top management shall ensure that the responsibilities and authorities for relevant roles are assigned, communicated and understood within the organisation.

Top management shall assign the responsibility and authority for:

- ensuring that the quality management system conforms to the requirements of this documented information;
- ensuring that the processes are delivering their intended outputs;
- reporting on the performance of the quality management system and on opportunities for improvement, in particular to top management;
- ensuring the promotion of customer focus throughout the Institute;
- ensuring that the integrity of the quality management system are planned and implemented.

Top management has ensured that the responsibilities and authority are defined and communicated within the Institute.

The Institutional Chart of the Institute is given in the annexure 1.

RESPONSIBILITY AND AUTHORITY

The responsibility, authority and interrelationship of personnel/bodies managing, performing and verifying all activities affecting quality of instruction, evaluation and other aspects of functioning of the Institute have been defined in the published Institute Rules:

The responsibilities of some of the key personnel managing the QMS are listed below:

DEPUTY DIRECTOR

Director will be assisted by Deputy Director who shall support him in all affairs related to Academic, Research, Faculty, Students and Administration. All policy decisions will be taken by Director and Dy Director and shall be presented to Deans Committee and later to Heads Committee for final implementation.

	Dy. Director
Responsibilities	Academics, Admission, Examination, Accreditations, Academic and sponsored Research, Consultancy, Distance education, International collaboration, ISO, Academic Audit, Convocation, TEQIP, Rankings Alumni affairs, Placement, Industrial Relations, Branding, Project semester
Sections	HOD/HOS/Deans
Authority	All leave applications approvals for Heads and Deans All financial sanctions Faculty appraisal All approvals for Expert lecture, PhD-outside expert, conferences (national & international), Seminars, workshops LTC, Children allowance approvals for both faculty and staff. Passport, NOC approval for applying to other Institutes Approval for Institute Car/Bus. Non-teaching issues
Reporting	Deans and Academic Audit cell , HOD/HOS shall report through Dy. Director to Director

Dy. Director shall try to resolve the matters in their domain forwarded by respective deans /Heads and intimate the director about the decisions taken or to be taken. For cases, which deputy directors are unable to resolve, will go to the director for final action whose decision shall be final. However, it will be necessary that the Director is informed about all the matters by Dy. director. All the cases/matters will be forwarded in the proper channel i.e. Heads – Deans – Dy. Director – Director.

Dean of Academic Affairs (DoAA), in coordination with Controller of Examiner (CoE)

- i) Admission of students at UG and PG levels
- ii) Design and Development of Instructional Process
- iii) Conducting regular meetings of SUGC, SPGC
- iv) Framing and revising rules and regulations pertaining to academics through SUGC and SPGC and finally Senate
- v) Preparation & distribution of academic schedule and time table
- vi) Registration of students at the beginning of each semester
- vii) Decisions regarding offering of backlog courses
- viii) Approval of examiners for various examinations at undergraduate and post-graduate levels (CoE)
- ix) Granting semester leave on genuine grounds to the students as per Institute rules and regulations
- x) Granting extensions etc. in the time period for submission of Seminar, and/or Thesis of Master of Engineering as per Institute rules and regulations
- xi) Conduct of all examinations (online and offline) in Thapar Institute of Engineering & Technology (CoE)
- xii) Preparation and implementation of Date-sheet and Duty-sheet for examination and invigilators (CoE)
- xiii) Monitoring the grading of students
- xiv) Attendance requirements: DOAA will decide the students to be detained on the basis of shortage of attendance.
- xv) Award of A+ grade: To be decided by DOAA. A+ shall be awarded to those students only who are distinctly and clearly above the students getting A grade.
- xvi) Award of F, I Grade: To be decided by DOAA.
- xvii) Any change in grade: Director's approval on the recommendations of DOAA
- xviii) DOAA to handle all the cases for award of 'X' grade

Dean of Research & Sponsored Projects (DoRSP)

- i) Admission, progress monitoring and evaluation of Ph.D. candidates.
- ii) Promotion of Research Activities in the Institute.
- iii) Initiating, submission and follow-up of project proposals to sponsoring agencies and timely completion of the sponsored projects.
- iv) Initiating, submission and follow-up of proposals for short term courses, summer/winter schools.
- v) Transmitting the information of sanctioned proposals to the HCILP for collation and to the concerned Deptts/Schools/Centres for organising approved short term courses, winter/summer schools etc.
- vi) Promotion of consultancy in the Institute

Dean of Students Affairs (DoSA)

- i) Welfare of students in the Institute, their conduct, discipline, seriousness to studies, health, scholarships, fee concessions etc.
- ii) Functioning of Hostels, promoting corporate community living and self-management including management of kitchen, mess and dining hall.
- iii) NSS programmes
- iv) Cultural Programmes organised by various Societies for all round personality development of students.
- v) Constituting Students Consultative Committee and holding meetings for flow of ideas towards growth & development of Institute
- vi) In his capacity as Chairman Disciplinary Committee to convene it's meeting and to recommend disciplinary action whenever required.

Dean of Contemporization and Accreditation (DOCA).

This deanship to focus on the following:

- i) Process excellence. This involves redesign and refinement of academic, administrative and operational processes to achieve TIET's long term vision of Contemporization.
- ii) Enhance research funding from both national and international (exploratory) agencies. This also include exploring joint research projects with domestic and foreign Universities.
- iii) Branding and ranking.
- iv) Globalization with respect to student exchange, faculty exchange, attracting international students and faculty. This could also include finding opportunities for our students to find foreign internships and placement opportunities.
- v) Developing a “venture” lab to enhance the entrepreneurial opportunities for all our students.

The new associate dean will generally focus on all the above five items but particularly focus on items i) to iii).

Dean of Faculty Affairs (DoFA)

- i) Recruitment of faculty in the Institute
- ii) Faculty Development Programs and other policies and procedures that concern the quality and welfare of the faculty
- iii) Faculty attraction and retention
- iv) Performance Appraisals Evaluation and Incentive Scheme of faculty

HEAD OF DEPARTMENT/SCHOOL

- i) Preparation of teaching load (Assigning courses to various faculty members and laboratory instructional work to technical staff)
- ii) Ensuring syllabus to Faculty at the start of semester
- iii) Ensuring that the Instructional delivery process is carried out as per schedule
- iv) Initiating the instructional design, development/modification process through Board of Studies (BOS) as and when the need arises
- v) Collecting feedback from students and industry to serve as input for instructional design, development and modification
- vi) External provision of machinery, equipment, software & instructional material as required
- vii) Maintaining retained documented information like
 - * Initiation of Instructional design
 - * Course files
 - * Students' complaints and their redressal
 - * Admission of M.E. and Ph.D. students
 - * Ongoing research projects in the department
 - * Ongoing consultancy work in the department
- viii) Placement, monitoring & evaluation of students for Project Semester.
- ix) Upkeep and maintenance of machinery and equipment in Department.
- x) Ensuring continuous up gradation of machinery, equipment, facilities, instructional aids etc. in the department by mobilizing funds
- xi) Promotion of Research & Consultancy in the department
- xii) Organisation of continuing education programs, sponsored/in-house short-term courses, workshops, seminars, conferences, symposia, winter/summer schools
- xiii) Interaction with the students, providing them the required guidance & counselling
- xiv) Monitoring and functioning of technical societies in the department
- xv) Annual physical verification of assets and recommendations for write off
- xvi) Conduct the meetings of the following committees regularly
 - * Board of Studies
 - * Faculty meetings
 - * Departmental Library Committee
 - * DPPC (monthly)
- xvii) Ensure timely utilisation of various grants
- xviii) Ensure adjustment of maximum backlog courses of students in consultation with DOAA

HEAD OF CENTRE

In general, the responsibilities of the Head of a Centre are :

- i) Efficient functioning and prompt discharge of the responsibilities assigned to the centre as per their documented system
- ii) Effecting pro-active & reactive improvement in the centre
- iii) Maintenance and retention of documented information and physical infrastructure
- iv) Active participation in continuing education programmes

The activities of each Centre differ widely depending upon their role and responsibilities. Specific responsibilities of various Heads of the Centres are briefly given below:

HEAD, CENTRAL LIBRARY

- i) Acquisition, stocking and display of books, journals, back volumes, national/international standards, CD-ROM, databases, audio and video cassettes, search packages etc.
- ii) Cataloguing the acquired library material
- iii) Ensuring smooth access, issue and return of library material as per documented information
- iv) Providing reprographic facility for reference material
- v) Maintenance of library equipment and material
- vi) Annual physical stock verification of library material
- vii) Inter library networking for library and information services to users

HEAD, CENTRAL WORKSHOP

- i) Imparting basic technical knowledge and developing requisite skills in various manufacturing processes e.g. carpentry, electro-plating, forging, machining, metal casting, sheet metal work, tin smithy and welding etc.
- ii) Providing on-the-job training covering practical, managerial and commercial aspects of manufacturing to the students
- iii) Assisting and guiding in the manufacture of experimental rigs and set-ups for postgraduate students and research scholars
- iv) Modernisation and up gradation of infrastructural facilities
- v) Conducting special training programmes for in-service technical personnel

HEAD, CENTRE FOR INDUSTRIAL LIAISON AND PLACEMENT (CILP)

- i) Organising Campus placement of students
- ii) Promoting Industry-Institute-Interaction
- iii) Assisting the departments in the placement of students in public/private sector undertaking for project semester and summer term training , if required
- iv) Collecting feed-back regarding academic programmes and performance of students and transmitting the same appropriately for reactive corrections
- v) Collecting information regarding offering of various continuing education programmes, sponsored/in-house short term courses, winter/summer schools, workshops etc. and transmitting the same to industries/institutions/users through brochures

HEAD, CENTRE OF INFORMATION AND TECHNOLOGY MANAGEMENT

- i) Ensuring the availability of computing facilities as and when required by the users
- ii) Continuous modernisation and up gradation of the facilities
- iii) Ensuring the physical infrastructure to be in good working condition/order through preventive and corrective maintenance
- iv) Repair and maintenance of instruments/equipment in Institute laboratories
- v) Design and fabrication of teaching aids/instruments and equipment for research work
- vi) Extending services for external provision and installation of instruments/equipment by Departments
- vii) Organising training programmes on design, use, fabrication and maintenance of instruments/equipment
- viii) Offering consultancy and services to outside organisations
- ix) Ensuring internet and e-mail service to users of Institute
- x) Ensuring proper working of Institute Website
- xi) Implementation, maintenance and up gradation of ERP at Institute level
- xii) Advising for implementation of EPBAX at Thapar Institute of Engineering & Technology
- xiii) Liaoning with different units for their Software need
- xiv) Build understanding with IT companies for the benefit of students and faculty of Institute
- xv) To maintain a good level of infrastructure for students, faculty and research scholars
- xvi) To coordinate with internet service providers for the delivery of best internet and other services

HEAD, HEALTH CENTRE

- i) Providing preliminary medical services to the Institute community and if need be to refer them to the specialists
- ii) Training the campus community for healthy living as well as extending preliminary medical aid in times of emergency
- iii) Ensuring hygienic conditions in Hostel Mess & Dining Hall, Campus Canteens etc.
- iv) Participating in special health drives for prevention/eradication of various diseases

MANAGEMENT REPRESENTATIVE (MR)

The Director vide his Office Order no. 48 dated 19th March 2013, has appointed Dr. Mandeep Singh, Professor, Electrical and Instrumentation Engineering Department, as the Management Representative (MR) who over and above his responsibilities has been assigned the responsibility and authority for:

- i) Establishing, implementing and maintaining a quality system in accordance with ISO 9001 requirements and coordinating different functions and activities within the Institute in the said regard
- ii) Reporting the performance of the quality system to the Institute management for periodic review & improvement
- iii) Ensuring the promotion of awareness of students and employing industry's requirements throughout the Institute
- iv) Liaison with external agencies on matters relating to the quality of Instructional System at TIET

6 Planning

6.1 Actions to address risks and opportunities

6.1.1 When planning for the quality management system, the Institute shall consider the issues referred to in 4.1 and the requirements referred to in 4.2 and determine the risks and opportunities that need to be addressed to:

- a) give assurance that the quality management system can achieve its intended result(s);
- b) enhance desirable effects;
- c) prevent, or reduce, undesired effects;
- d) achieve improvement.

A team of experts in the institute identified the information about the risks and opportunities that need to be addressed to.

After due deliberations and the same is listed below as:

Risks

- decline in quality admissions
- decline in placements
- faculty attrition rate
- decline in Institute ranking
- obsolescence of research and lab equipment
- changes in statutory regulations
- discontent amongst students

Opportunities

- better marketing for quality admissions
- enhanced outreach to employers
- exploration for external funding and grants for modernisation
- consideration for better interaction and engagement with students

6.1.2 The Institute shall plan:

- a) actions to address these risks and opportunities;
- b) how to:
 - integrate and implement the actions into its quality management system processes (see 4.4);
 - evaluate the effectiveness of these actions.

Actions taken to address risks and opportunities shall be proportionate to the potential impact on the conformity of products and services.

NOTE 1 Options to address risks can include avoiding risk, taking risk in order to pursue an opportunity, eliminating the risk source, changing the likelihood or consequences, sharing the risk, or retaining risk by informed decision.

NOTE 2 Opportunities can lead to the adoption of new practices, launching new products and services, opening new markets, addressing new customers, building partnerships, using new technology and other desirable and viable possibilities to address the Institute's or its customers' needs.

Every department/School/Centre shall maintain a risk file, identifying the risks and opportunities, making the action plan, and monitoring the action taken. This activity shall be carried out at least once in semester, and the documented information be retained.

The institute carries out risk analysis to identify and eliminate the causes of potential non-conformities in order to prevent their occurrence. Risk assessment and mitigation is appropriate to the effects of the potential problems. A documented information has been established which includes:

- i) To analyze information pertaining to feedback received through student response survey, result of students, CGPA levels of a class, feedback from the companies who came for campus recruitment and other such sources with a view to determine potential non-conformities.
- ii) To determine steps needed to deal with any problem requiring risk assessment and mitigation
- iii) To initiate risk assessment and mitigation and to apply controls to prevent non-conformities
- iv) To confirm that relevant information on actions taken to prevent non-conformities is submitted for management review.
- v) Retaining documented information of the results of action taken and reviewing the risk assessment and mitigation.
- vi) Review the effectiveness of the risk assessment and mitigation.

6.2 Quality objectives and planning to achieve them

6.2.1 The Institute shall establish quality objectives at relevant functions, levels and processes needed for the quality management system.

The quality objectives shall:

- a) be consistent with the quality policy;
- b) be measurable;
- c) take into account applicable requirements;
- d) be relevant to conformity of products and services and to enhancement of customer satisfaction;
- e) be monitored;
- f) be communicated;
- g) be updated as appropriate.

The Institute shall maintain documented information on the quality objectives.

6.2.2 When planning how to achieve its quality objectives, the Institute shall determine:

- a) what will be done (objectives and goals);
- b) what resources will be required;
- c) who will be responsible;
- d) when it will be completed;
- e) how the results will be evaluated.

The objectives and goals of the Institute as well as the indicators/ documented information of their measurement and monitoring are given below:

(A) Organization Objectives

Objectives and Goals	Means to achieve the objective	Measurement Criteria/ Indicators	Responsibility
1. To develop high quality, professionally groomed technical and engineering manpower.	<ul style="list-style-type: none"> • Continuous up gradation of: <ul style="list-style-type: none"> - Curriculum, matching with national needs - Delivery methodology - Manpower and infrastructural facilities • Facilities for co-curricular & extracurricular activities • Counseling • To generate & maintain Conducive and congenial academic environment • Help & guidance system outside the class room • Professional societies • Efficient services to & disposal of requests of the students • Improving communication Skills 	<ul style="list-style-type: none"> • Feedback from students • Feedback from the industry/ organizations participating in campus placements • Status, standing and profile of the alumni • Frequency of revision of curriculum • Feedback from external participants in refresher/short term courses • No. of training programmes organized, attended by the employees 	DoAA DoSA Heads

		<ul style="list-style-type: none"> • Sectional placements of student - Higher education - Industry - Service Sector - Entrepreneurs 	
<p>2) To be amongst the top ranking Universities of technical & higher education</p>	<ul style="list-style-type: none"> • Defining vision & mission & translating into actions • To identify the National/ International University for Bench Marking • Periodic self-assessment & reviews • Accreditation by UGC/ AICTE • Interaction with other Institute/ organization 	<ul style="list-style-type: none"> • Results of accreditation by UGC/AICTE • Trends of options exercised by high ranking candidates in the common entrance test (GATE & NET for admission to the Institute • Published reports by regulatory authority agencies and media • Status & profile of the organizations employing our students. 	<p>DD/DoFA Heads</p>

<p>3) To act as a facilitator for knowledge generation & dissemination</p>	<ul style="list-style-type: none"> • Pure and applied research in the frontier areas • Development of curriculum & co-curriculum programs for the dissemination of knowledge 	<p>Growth in:</p> <p>i. Number of specialization under M.E./Ph.D. Programme being offered</p> <p>ii. Number of M.E./Ph.D. degrees awarded each year</p> <p>iii. Number of papers published in referred journals and presented/published in conferences and proceedings at National & International level</p> <p>iv. Number of on-going sponsored research projects</p> <p>v. Number of on-going consultancy projects.</p> <p>vi. Number of patents filed/sealed</p> <p>vii. Feedback from the industry</p>	<p>DoRSP</p> <p>DoAA</p> <p>Heads</p>
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(B) OBJECTIVES OF VARIOUS FUNCTIONS AND LEVELS

- Instructional Design & Development
- Instructional Delivery and Evaluation
- Research and Development
- Student Affairs

Quality planning includes determining the quality objectives and requirements for the product and services and covers the following:

- a) Identifying and procuring state-of-art instructional processes with matching evaluation & management system to meet quality objectives and process requirements.
- b) Matching the instructional design and development with the requirements of the customers i.e. students, industry and society at large.
- c) Matching the resources e.g. knowledge & skill of faculty members as well as, technical and support staff, existence of good quality operational equipment in the laboratories and availability of other facilities like teaching aids relevant to the instructional design.
- d) Laying down a scheme to control the instructional process for evaluation of students at various stages.
- e) Specifying the performance criteria and verification of the same for successful completion of the process culminating into award of degree/certificate.
- f) Objective evidence shown through retained documented information that the realization process and resulting product and services meet the requirements.

6.3 Planning of changes (to be continued)

When the Institute determines the need for changes to the quality management system, the changes shall be carried out in a planned manner (see 4.4).

The Institute shall consider:

- a) the purpose of the changes and their potential consequences;
- b) the integrity of the quality management system;
- c) the availability of resources;
- d) the allocation or reallocation of responsibilities and authorities.

7 Support

7.1.1 General

The Institute shall determine and provide resources needed to establish, implement, maintain, and continually improve the QMS. And shall consider

- a) the capabilities of, and constraints on, existing internal resources
- b) what needs to be obtained from external providers.

For each programme, depending upon the number of registered students and the detailed curriculum, the requirements of human (e.g. faculty in the area of expertise, technical & supporting staff) and physical resources (e.g. Classrooms, Labs, Equipment, Software) are estimated and submitted to the management for consideration and approval. The Director and the concerned heads are responsible for provision of needed resources to ensure smooth functioning of each programme. Resources needed for internal quality audits are also ensured by the Director as per need projected by MR.

7.1.2 People

The Institute shall determine and provide the persons necessary for the effective implementation of its QMS and also for operation and control of its processes. To this effect, the institute has appointed ISO Management Representative (MR), with a team of Deputy Management Representatives (DMRs) and Department/School ISO Coordinators.

7.1.3 Infrastructure

The Institute has determined the requirements for infrastructure, provided it and is maintaining and upgrading it from time to time to meet the requirements of instructional process so that quality of instructional design and delivery and in turn professional development of the students is achieved. The infrastructure provided in the Institute includes:

- a) Building including classrooms, auditoriums, laboratories, library, computer centers, offices, hostels, workshops, dispensary, play grounds, indoor sports facilities and others.
- b) Equipment and software in the laboratory, books and other referral material in the library, furniture and fixtures in offices, classrooms and hostels etc.
- c) Support services such as communication or information systems like telephone, fax, internet (e-mail); and transport like college bus, cars etc.

7.1.4 Environment for the Operation of Processes

The Institute shall determine, provide, and maintain the environment necessary for the operation of processes and to achieve conformity of products and services. A Suitable environment for operation of processes can be a combination of human and physical factors such as social (for e.g. non-discriminatory, calm, non-confrontational etc.), psychological (for e.g. stress reducing, burnout prevention, emotional protective), physical (for example, temperature, heat, humidity, light, airflow, hygiene, noise). These factors can differ depending on the type of product and service provided by the Institute.

All the class rooms are well ventilated and well lit. Most of the classrooms are having projection facilities and some of them are air-conditioned. Safety factor is duly considered while designing the buildings. The Institute ensures maintenance of security and discipline by employing adequate guards (both male and female). In house dispensary with resident doctors and faculty in-charge ensures the medical facility to all campus residence. The Institute has its own Ambulance to cater to the needs of medical emergencies. Institute has a regular counselor to monitor and relieve psychological stress of the students. Regular activities are held to provide ample social interaction amongst the students and the staff.

7.1.5 Monitoring and Measuring Resources

7.1.5.1 General

The Institute shall determine and provide the resources needed for valid and reliable monitoring and measuring results, where monitoring or measuring is used for evidence of conformity of products and services to specified requirements. The Institute shall ensure that the resources provided are suitable for the type of monitoring and measurement activities being undertaken and are maintained to ensure continued fitness for their purpose. The Institute shall retain appropriate documented information as evidence of fitness for the purpose of monitoring and measurement resources.

The Institute has appointed a team of Deputy Management Representatives, along with Departmental ISO Coordinators who work under the aegis of Management Representative a team that ensures conformity of products and services to specified requirements.

7.1.5.2 Measurement Traceability

Where measurement traceability is a requirement (statutory or regulatory or customer or relevant interested party expectation) or considered by the Institute to be an essential part of providing confidence in the validity of measurement results, measuring instruments shall be verified or calibrated at specified intervals or prior to use against measurement standards traceable to international or national measurement standards. The Institute shall retain the basis used for calibration or verification as documented information if no such standard exists as documented information. Measuring instruments shall be identified in order to determine their calibration status; It shall be safeguarded from adjustments, damage, or deterioration that would invalidate calibration status and subsequent measurement results. The Institute shall determine if the validity of previous measurement results has been adversely affected when an instrument is found to be defective during its planned verification or calibration, or during its use, and take appropriate corrective action as necessary.

The Institute has made arrangements to control, calibrate & maintain monitoring and measuring devices (including software) to ensure that the product and services conform to the specified requirements.

Bulk of measuring & test equipment being for instructional purposes, the scope of this clause in general is therefore, limited to control and maintenance. However, wherever inspection is warranted it is carried out.

The arrangements made in every department of the Institute for Control of monitoring and measuring devices include the following:

- i) Identification of the measurements to be made and standards to be followed.
- ii) Selection of appropriate equipment for measurement.
- iii) Calibration (restricted to Civil Engineering Department for Testing work) including calibration process indicating calibration status.
- iv) Validating the results of previous inspection, if equipment is found out of calibration.
- v) Suitable environment for calibration.
- vi) Handling, storage and preservation of equipment as well as safeguarding against any tampering after calibration.

7.1.6. Organizational Knowledge

The Institute shall determine the knowledge necessary for the operation of its processes and to achieve conformity of products and services. This knowledge shall be maintained and made available to the extent necessary. When addressing changing needs and trends, the Institute shall consider its current knowledge and determine how to acquire or access any necessary additional knowledge and required updates. Organizational knowledge is knowledge specific to the organization; it is generally gained by experience. It is information that is used and shared to achieve the organization's objectives. Organizational knowledge can be based on: a) Internal Sources (e.g., intellectual property, knowledge gained from experience, lessons learned from failures and successful projects, capturing and sharing undocumented knowledge and experience; the results of improvements in processes, products, and services); b) External Sources (e.g., standards, academia, conferences, gathering knowledge from customers or external providers).

When addressing changing needs and trends, the organization shall consider its current knowledge and determine how to acquire or access any necessary additional knowledge and required updates.

NOTE 1 Organizational knowledge is knowledge specific to the organization; it is generally gained by experience. It is information that is used and shared to achieve the organization's objectives.

NOTE 2 Organizational knowledge can be based on:

- a) internal sources (e.g. intellectual property; knowledge gained from experience; lessons learned from failures and successful projects; capturing and sharing undocumented knowledge and experience; the results of improvements in processes, products and services);
- b) external sources (e.g. standards; academia; conferences; gathering knowledge from customers or external providers).

The Institute has its Intellectual Property Rights (IPR) cell that caters to the IPR needs like filing of patents, claiming of copyrights etc. Nava Nalanda Central Library of the Institute maintains all digitized records of Masters and Doctoral Thesis of all the students since 2006 in DSPACE (Digital Signal Processor for Applied and Control Engineering). Proceedings of all the conferences attended by the faculty are maintained in departmental/central library. Retained documented information of all research papers published in filed in the Annual Report of the Institute.

7.2 Competence

The Institute shall determine the necessary competence of person(s) doing work under its control that affects the performance and effectiveness of its QMS; It shall ensure that ensure that these persons are competent on the basis of appropriate education, training, or experience and where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken; It shall retain documented information as evidence of competence. Applicable actions can include, for example, training, mentoring, or reassignment of currently employed persons; or hiring or contracting of competent persons.

“Competence” is defined as the ability to apply knowledge and skills to achieve intended results. Demonstrated competence is sometimes referred to as “qualification”.

The Institute has determined for every position in teaching and non-teaching categories, the necessary competence for personnel performing work, affecting conformity to product. The qualifications and experience required as eligibility condition for various positions are as per the regulatory and funding agencies like UGC, AICTE, Government and others.

Where applicable, training is provided to various categories of employees to achieve the necessary competence in the activities being performed by them. Training needs are determined from time to time based on employees’ job rotation, career progression, and change in technology systems or structure in the organization.

After provision of training, feedback on its effectiveness is taken from the participants, resource persons (trainers) as well as from the supervisors of the participants. Through the analysis of this feedback the effectiveness of the actions taken is measured which serve as a feedback for the future actions to be taken.

The Institute ensures, through training programmes, circulars, notices, quality policy, work instructions and meetings that all its employees are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives.

Retained documented information of education, training, skills and experience is maintained and updated from time to time.

7.3 Awareness

Persons doing work under the Institute's control shall be aware of

- a) the quality policy;
- b) relevant quality objectives;
- c) their contribution to the effectiveness of the QMS, including benefits of improved quality performance;
- d) and the implications of not conforming with system requirements.

7.4 Communication

The Institute shall determine the internal and external communications relevant to the QMS, including:

- a) on what it will communicate;
- b) when to communicate;
- c) with whom to communicate;
- d) how to communicate;
- e) who communicates

Management Representative shall be responsible for the communication relevant to QMS to all functional heads on time to time basis. Further, top management has ensured that appropriate communication processes are established within the Institute and that communication takes place regarding the effectiveness of the quality management system. This include a PBX facility and telephone availability to all employees, Internet facility with email ID of all teachers and offices, circulars, officer orders, notices, meetings & reviews.

7.5 Documented Information

7.5.1 General

The Institute's QMS shall include

- a) all documented information required by ISO 9001
- b) the documented information determined by the Institute as being necessary for the effectiveness of the QMS.

Note: The extent of documented information can differ from one organization to another due to:

- a) the size of the organization and its type of activities, processes, products, and services;
- b) complexity of processes and their interactions;
- c) competence of persons.

7.5.2 Creating and Updating

When creating and updating documented information the Institute shall ensure appropriate

- a) identification and description (e.g., a title, date, author, or reference number);
- b) format (e.g., language, software version, graphics), and media (e.g., paper, electronic);
- c) review and approval for suitability and adequacy.

7.5.3 Control of Documented Information

7.5.3.1

Documented information required by the QMS and by ISO 9001 shall be controlled to ensure:

- a) it is available and suitable for use, where and when it is needed;
- b) it shall be adequately protected from loss of confidentiality, improper use, or loss of integrity.

7.5.3.2

For the control of documented information, the Institute shall address, as applicable:

- a) distribution, access, retrieval, and use;
- b) storage and preservation, including preservation of legibility;
- c) control of changes (e.g., version control);
- d) retention and disposition.

Documented information of external origin determined by the Institute to be necessary for the planning and operation of the system shall be identified as appropriate, and controlled.

Documented Information retained as evidence of conformity shall be protected from unintended alterations

Note: Access can imply a decision regarding the permission to view the documented information only, or the permission and authority to view and change the documented information.

8 Operation

8.1 Operational Planning and Control

The Institute shall plan, implement, and control the processes, as outlined in 4.4, needed to meet requirements for the provision of products and services and to implement the actions determined in 6.1 by

- a) determining product and services requirements;
- b) establishing criteria for
 - 1) the processes
 - 2) the acceptance of products and services;
- c) determining the resources needed to achieve conformity to product and service requirements;
- d) implement control of the processes in accordance with the criteria;
- e) determining, maintaining and retain documented information to the extent necessary
 - 1) to have confidence that the processes have been carried out as planned
 - 2) to demonstrate conformity of products and services to requirements.

The output of this planning shall be suitable for the Institute's operations.

The Institute shall control planned changes and review consequences of unintended changes, taking action to mitigate any adverse effects, as necessary.

The Institute shall ensure outsourced processes are controlled in accordance with 8.4.

8.2 Determination of Requirements for Products and Services

8.2.1 Customer Communication

The Institute shall establish the processes for communicating with customers to:

- a) provide information relating to products and services;
- b) handle inquiries, contracts, or order handling, including changes;
- c) obtain customer feedback relating to product and services including customer complaints;
- d) handle or controlling customer property
- e) establish specific requirements for contingency actions, when relevant.

The Institute has determined and implemented effective arrangements for communicating with students. The arrangements include information brochure which contains information about all programmes, eligibility criteria, fees and other such details. For feedback including complaints and their redressal, telephone, e-mail, post etc. are provided and responsibilities are defined.

The following retained documented information of customer related processes are maintained for stipulated time:

- Brochure
- Applications of candidates
- Admission and Registration retained documented information
- MOUs on Consultancy/Test services
- Feed backs

8.2.2 Determination of Requirements related to Products and Services

The Institute shall ensure, while determining the requirements for the products and services to be offered to customers that the product and service requirements (including those considered necessary by the Institute), and applicable legal requirements, are defined. The Institute shall also ensure that it has the ability to meet the defined requirements and substantiate the claims for the products and services it offers.

8.2.3 Review of Requirements for Product and services

8.2.3.1 The Institute shall ensure that it has the ability to meet the requirements for products and services to be offered to customers. The Institute shall conduct a review before committing to supply products and services to a customer; The review shall include

- a) the requirements specified by the customer, including the requirements for delivery and post-delivery activities;
- b) requirements not stated by the customer, but necessary for the specified or intended use, when known;
- c) requirements specified by the Institute;
- d) statutory and regulatory requirements applicable to the products and services;
- e) contract or order requirements differing from those previously expressed.

The Institute shall ensure that contract or order requirements differing from those previously defined are resolved. When the customer does not provide a documented statement of their requirements, the Institute shall confirm them before accepting them.

Note: In some situations, such as internet sales, when a formal review is impractical for each order, the review can cover relevant product and services information, such as catalogues.

8.2.3.2 The Institute shall retain documented information

- a) on the results of the review
- b) on any new requirements for the products and services.

For every programme run by the Institute the resource requirements are reviewed from time to time based on the changing requirements of the employing organizations and major developments in science and technology. It is ensured that the Institute has the capability and the capacity to impart quality education and produce competent engineers and other professionals in all the programmes run by the Institute.

8.2.4 Changes to requirements for products and services

The Institute shall ensure that relevant documented information is amended, and that relevant persons are made aware of the changed requirements, when the requirements for products and services are changed.

8.3 Design and Development of Products and Services

8.3.1 General

The Institute shall establish, implement, and maintain a design and development process such that they are adequate for subsequent production or service provision.

The Institute plans and controls the design and development of curriculum and the qualities required in the passing out students. The scope includes the following for all the programmes/services offered by the Institute.

- i) Curriculum design
- ii) Detailed syllabi of all courses
- iii) Logical sequence of courses including their pre-requisites
- iv) Instructional Methodology
- v) Evaluation Criteria & Methodology

The responsibility for design control lies with the following :

ACTIVITY	RESPONSIBILITY
Identification, feasibility study and viability of new programmes	Director, P&MB, Senate, BOG.
Approval by AICTE/UGC for new programmes.	Registrar
Need Assessment, Design and Development (For New as well as review of on-going programmes)	HOD
Review and Verification of Need Assessment, Design and Development.	BOG
Review and Validation of Design and Development through statutory bodies e.g. senate and its sub-committees (SUGC, SPGC).	DOAA
Review & validation by BOG	Registrar

8.3.2 Design and Development Planning

While planning for design and development, the Institute shall consider the following in determining the stages and controls for design and development:

- a) the nature, duration and complexity of the design and development activities
- b) the required process stages, including applicable design and development reviews
- c) the required design and development verification and validation activities;
- d) the responsibilities and authorities involved in the design and development process;
- e) the internal and external resource needs for the design and development of products and services;
- f) the need to control interfaces between persons involved in the design and development process
- g) the need for involvement of customers and users in the design and development process
- h) the requirements for subsequent provision of products and services;
- i) the level of control expected for the design and development process by customers and other relevant interested parties;
- j) the documented information needed to demonstrate that design and development requirements have been met

Planning and Monitoring Board of the Institute ensures that the design & development activity is carried out in a planned manner. Detailed planning for design and development of instructions is done by DOAA. Design plans include the activities & sub activities including techniques & organizational interfaces and the time frame for completion. The plans are updated, as the instructional design evolves.

Need analysis report (periodically or as per need) shall comprise of :

- i) Stated customer needs
- ii) Needs which the customer has yet not realized (Implied needs).
- iii) Overall goals of Instructions
- iv) Relevant standards i.e. AICTE and UGC guidelines and Curricula of Entrance Tests like Indian Engineering Services (IES) and Graduate Aptitude Test for Engineers (GATE), etc.
- v) General characteristics of target population.

Organizational & Technical Interfaces:

Organizational and Technical interfaces between different faculty and external expert groups providing input to the instructional design are defined, committees are constituted and their reports are documented. Faculty members from different disciplines connected with the design & development activity are associated with the process. The updation/restructuring is carried out as the design process progresses. Clear responsibilities are assigned and effective communication is ensured.

8.3.3 Design and Development Inputs

The Institute shall determine the requirements essential for the specific type of products and services being designed and developed, including, as applicable,

- a) functional and performance requirements;
- b) information derived from previous similar design and development activities
- c) applicable legal requirements;
- d) standards or codes of practice the Institute has committed to implement;
- e) potential consequences of failure due to the nature of products and services;
- f) Ensure inputs are adequate for design and development purpose, complete, and unambiguous.
- g) Resolve conflicts among Design and Development inputs.

The Institute shall retain documented information and design and development inputs.

The requirements of instructional design are determined and documented information is retained. For instructional design, the input is taken from various sources. Input requirements are clearly understood and reconciled. The design input may come from:

- i) Need analysis & Reviews
- ii) Recommendations from alumni, senior management, industry etc.
- iii) Success/failure reports of similar courses & programmes
- iv) Published literature relevant to programmes
- v) Boundary condition w.r.t GATE, IES, IAS curricula etc.

Design and Development Process

The process of determining solutions to satisfy the identified needs is laid down and documented. Instructions are designed by incorporating these solutions. The analysis and mappings are recorded. The design output at this stage is taken as the initial design for subsequent reviews.

8.3.4 Design and Development Controls

The Institute shall apply controls to the design and development process to ensure that

- a) results to be achieved by the design and development activities are clearly defined;
- b) Design and development reviews are conducted as planned;
- c) Verification activities are conducted to ensure that the design and development outputs have met the design and development input requirements;
- d) Validation activities are conducted to ensure that the resulting products and services are capable of meeting the requirements for the specified application or intended use (when known).
- e) any necessary actions on the problems determined during the reviews, or verification and validation activities.
- f) maintain any documented information of these activities.

Note: Design and development reviews, verification and validation have distinct purposes. They can be conducted separately or in any combination as is suitable for the products and services of the Institute.

Verification of design is conducted by comparison of the design with similar courses run by prestigious Universities. Evolved designs are also verified by taking independent opinion of the experts from amongst the peer group from within or outside the Institute. The new curriculum is introduced only after adequate verification.

New/revised curriculum and instructional design is made applicable to the prospective students. The curriculum is validated in the initial stages of its introduction by taking a close feedback from students and faculty members regarding the effectiveness and applicability of the curriculum, with regard to the documented needs. Necessary changes, if required, are made to ensure that the design conforms to defined needs of the students. Additional instructional sessions and allied inputs are arranged for students/participants whenever required.

Design changes are made both reactively as well as proactively. The need is identified from the feedback from the students and/or analysis of data of their performance. Periodic design changes are also effected to offset the obsolescence of the design or if a need for change is realized. All the steps as required for initial design & development are followed for effecting and incorporating changes. Review is carried out and changes are documented. Retained documented information of the results of the review are maintained.

8.3.5 Design and Development Outputs

The Institute shall ensure that design and development outputs

- a) meet the input requirements for design and development
- b) are adequate for the subsequent processes for the provision of products and services.
- c) include or have a reference of monitoring and measuring requirements, and acceptance criteria, as applicable
- d) are fit for intended purpose and their safe and proper use.

Note: The Institute shall retain the documented information resulting from the design and development process.

The output of instructional design & development is documented in the form of a report named “Curriculum and Scheme of Courses”. Through various reviews and verifications, it is ensured that the design output meets the design input requirements. The design output report includes:

- i) The types and levels of skill and knowledge to be imparted
- ii) Details of need analysis and mappings at various stages
- iii) Scheme of courses and the detailed syllabi
- iv) Instructional strategies.
- v) Selection of instructional aids for delivery.
- vi) Assessment and evaluation.

The output documents like curriculum and instructional strategies are reviewed and approved before release at various levels and stages.

8.3.6 Design and Development Changes

The Institute shall identify, review and control changes made (during the design and development of products and services, or subsequently) to design inputs and design outputs to the extent that there is no adverse impact on conformity to requirements.

The Institute shall retain documented information on

- a) design and development changes, the result of review,
- b) the authorization of changes
- c) action taken to prevent adverse impact.

Reviews are conducted at defined stages of the curriculum Design, in which faculty members from the concerned area as well as experts from amongst the peer group from within and/or outside the Institute are associated. Retained documented information of the reviews are maintained. Based on the reviews, the design is updated and brought into document control for revision. The design reviews are carried out at the end of each of the following stages using prescribed check lists:

- i) Need analysis based on alumni and industrial feedback
- ii) Design and review by BOS
- iii) Review by SUGC/SPGC
- iv) Review by Senate
- v) Review by BOG

8.4 Control of Externally Provided Products and Services

8.4.1 General

The Institute shall ensure that externally provided processes, products, and services conform to specified requirements.

The Institute shall apply the specified requirements for control of externally provided products and services when :

- a) products and services are provided by external providers for incorporation into Institute's own products and services;
- b) products and services are provided directly to the customer by external providers on behalf of the Institute;
- c) a process or part of a process is provided by an external provider as a result of a decision by Institute to outsource a process or function.

The Institute has Purchase Section under the aegis of Head Commercial and Human Resource Section under the aegis of Chief Human Resources Officer. These sections through their Standard Operational Procedures (SOP) have determined and apply the criteria for evaluation, selection, monitoring of performance, and re-evaluation of external providers based on their ability to provide processes or products and services in accordance with specified requirements. The Institute retains appropriate documented information of the above mentioned activities and any necessary action arising out of evaluation.

8.4.2 Type and Extent of Control

The Institute shall ensure that externally provided processes, products and services do not adversely affect the Institute's ability to consistently deliver conforming products and services to its customers.

The Institute shall

- a) ensure that externally provided processes remain within the control of its quality management system
- b) define both the controls that it intends to apply to an external provider and those it intends to apply to the resulting output.
- c) take into consideration
 - 1) potential impact of the externally provided processes, products, and services on the Institute's ability to consistently meet customer and applicable legal requirements
 - 2) effectiveness of the controls applied by the external provider.
- d) determine the verification or other activities necessary to ensure the externally provided processes, products, and services meet the requirements.

8.4.3 Information on External Providers

The Institute shall ensure the adequacy of specified requirements prior to their communication to external providers.

The Institute shall communicate to external providers applicable requirements for the following:

- a) products and services to be provided or the processes to be performed on behalf of the Institute;
- b) approval or release of products and services, methods, processes or equipment;
- c) competence of personnel, including necessary qualification;
- d) their interactions with the Institute's quality management system;
- e) control and monitoring of the external provider's performance to be applied by the Institute;
- f) verification activities that the Institute, or its customer, intends to perform at the external provider's premises.

The Institute has made arrangements to ensure external provision of faculty, officials and staff as per laid down norms and external provision of physical infrastructure conforming to laid down standards and specified requirements. The scope and responsibility under external provision includes:

Scope	Responsibility
1) External provision of faculty, officials, technical and other Staff/Faculty Affairs	Director/ Dean
2) External provision of physical infrastructure for instructional purposes	HEAD
3) External provision of physical infrastructure for general purpose e.g. office furniture and equipment, consumable like stationery and Housekeeping items	Registrar

Process for external provision

External provision of manpower and physical infrastructure are carried out in such a way that ensures quality of product and services as well as satisfaction of laid down norms & financial powers. Delegated power, if any, including regulatory requirements have been specified and are adhered to. External provision activity may be conducted through any of the following modes:

External provision of manpower

All regular appointments shall be through invitation or advertisement published in newspaper/magazines and/or through search committees constituted for the purpose. Subsequently, duly constituted selection committees as per the laid down criteria shall hold interviews. Selection shall be made on merit.

Temporary appointments, if needed, shall be, made on the recommendation of HOD's with subsequent approval by the prescribed appropriate authority.

External provision of physical infrastructure:

Items needed for physical infrastructure may be externally provided through:

- i) Notice inviting tenders
- ii) Rate Contract
- iii) Calling limited quotations
- iv) Proprietary items
- v) Spot Purchase Committee
- vi) Control Quota Items
- vii) Imprest
- viii) LC in case of Imported Items

Evaluation of external provider

(i) For Physical Infrastructure:

For regularly externally provided high value/ high volume items, the external providers shall be evaluated to assess their ability to meet the requirements through:

- * Initial evaluation
- * Post approval Periodic evaluation.

Evaluation process shall be based on one or more of the following criteria :

- * Inspection & Evaluation of external provider's quality system.
- * ISO 9001 approved external provider.
- * Evaluation of product/material.
- * External provider's past history & quality rating, wherever available.

Items/product wise list of approved external providers shall be maintained in the department. Control shall be exercised on the external providers depending on the criticality of the product and services through product and services classification and the past experience and quality rating (if available) of the external providers.

(ii) For External Provision of faculty:

For augmenting the faculty in deficient area or in case of an emergent need, faculty services shall be externally provided, based on a specified evaluation process and as per laid down criteria.

(iii) For Students Project Semester Placement:

Identification of prospective industries/organisations where students shall be placed for project semester, evaluation shall be carried out based on following considerations:

- * Organisation's name, corporate image and market reputation.
- * Sales turnover and Number of employees.
- * Qualifications of personnel at the executive level.
- * Nature of Projects that can be undertaken/offered.
- * Support Facilities offered by the organisation.

External Provision Information

External Provision Documented Information has been designed to include all product/service specific acceptance criteria, cost details, requirements of qualifications of personnel and the quality management system requirements.

Verification of externally provided manpower

Externally provided manpower shall be periodically appraised as per documented information during probation and before confirmation as well as thereafter to ensure that they meet all specified requirements.

Verification of externally provided physical infrastructure

The verification of externally provided physical infrastructure shall be carried out as per the details given in the documents, quality plans and retained documented information thereof shall be maintained.

Verification of externally provided products and services at the premises of external provider.

Wherever specified, the data, the machinery, the equipment and other externally provided items shall be inspected by the indenter and verified at the external provider's premises.

Retained documented information

All retained documented information for the external provisions shall be maintained.

8.5 Production and Service Provision

8.5.1 Control of Production and Service

The Institute shall implement production and service provision under controlled conditions. Include these controlled conditions, as applicable:

- a) availability of documented information that defines characteristics of products and services.
- b) availability of documented information that defines activities to be performed and results to be achieved
- c) availability and use of suitable monitoring and measuring resources
- d) implementation of monitoring and measurement activities at appropriate stages to verify that criteria for control of processes and process outputs, and acceptance criteria for products and services, have been met.
- e) use and control of suitable infrastructure and process environment for operation of process.
- f) appointment of competent person and, where applicable, required qualification of persons;
- g) validation, and periodic revalidation, of ability to achieve planned results of any process for production and service provision where resulting output cannot be verified by subsequent monitoring or measurement
- h) implementation of products and services release, delivery, and post-delivery activities.

The instructional process in the Institute is planned, documented, and executed under controlled conditions for the attainment of desired goals. The flow chart for teaching activity is given in Annexure II

The major components of the instructional process to be controlled are:

Scope	Responsibility
1) Need Assessment	Head
2) Instructional Design & Development	DOAA
3) Imparting Instructions/Teaching	Instructor, DOAA
4) Conduct of Examinations	DOAA, Instructor
5) Outcome Measurement/Evaluation	Instructor
6) Discipline	Head, Deans, Dy. Director
7) Major support processes like administration, co-curricular activities, library, sports and extra-curricular activities	DOAA, DOSA, Head
8) Short Term Courses	Concerned Faculty

The control of instructional process in the Institute includes the following:

- i) Planning & execution of instruction as per curriculum needs for core and professional courses, with or without laboratory component, in compliance with references/codes designed curriculum and guidelines of UGC/AICTE.
- ii) Ensuring adequacy of qualified and trained manpower and physical infrastructure according to designed curriculum and class strength.
- iii) Provision of requisite material support.

in class rooms : chalk, duster, black board, seating arrangements, audio visual aids, if required.

in laboratories : machines, equipment, tools, instruments, test samples, consumable

in library : text books, reference books journals/video cassettes and other referral material

- iv) Maintenance of equipment & facilities to ensure their continued availability & process capability. This includes the machines, equipment and instruments/tools in the workshops and laboratories used in the instructional process.
 - v) Availability and use of monitoring and measuring resources.
 - vi) Planning and undertaking Industrial/educational visits.
 - vii) Placement, training and evaluation of students for Project Semester in private/public sector/industry/Institutes.
 - viii) Continuous monitoring and maintenance of instructional process parameters.
 - ix) Monitoring and control of any deviations of product and services quality or process parameters from design specifications.
 - x) Planning, execution and control of the following co-curricular/extracurricular activities to achieve the quality objective w.r.t. development of personality & physical/mental fitness of students.
- * Professional & literary societies organizing specialized seminars, quizzes, contests, group discussions, panel discussions, interaction between students, teachers and staff members for improving general skills of communication and presentation.
 - * Cultural societies like Music & Dramatic Society (MUDRA) organising functions i.e. IZHAAR, SATURNALIA etc. & other self-actualization activities like promotion of hobbies
 - * Games and Sports
 - * Others

All educational & training processes are special processes, as their quality cannot be measured immediately after delivery. Instructional process and plan is accordingly documented. Duly qualified and trained faculty & technical staff are assigned the responsibility of imparting instructions to ensure desired results.

8.5.2 Identification and Traceability

The Institute shall use suitable means to identify “process outputs” where necessary to ensure conformity of products and services.

The Institute shall identify status of “process outputs” with respect to monitoring and measurement requirements throughout production and service provision.

The Institute shall control unique identification of “process outputs” where traceability is a requirement. It shall retain any documented information necessary to maintain traceability.

“Process outputs” are results of any activities which are ready for delivery to customer or to an internal customer (e.g., receiver of inputs to next process). “Process outputs” can include products, services, intermediate parts, components, etc.

The Institute has made arrangements for identification of students & ensures traceability of data related to them throughout the realization process.

The scope includes the following:

Scope	Responsibility
1) Student Identification through	
* Original Application Form	D.R. (A)
* Original certificates	D.R. (A)
* Roll No., which provides information about their batch, branch and a unique Roll number.	D.R. (A)
* Semester Registration retained documented information	D.R. (A)
* Identity Card issued to all registered students (Hosteller/Day Scholars with address) every year.	D.O.S.A.
* Library Card	Librarian
2) Traceability of students data through :	
* Class schedule	DOAA
* Attendance retained documented information	Instructor/Tutor
* Performance retained documented information	D.R. (A)

The arrangements made in the Institute for Identification and traceability:

- i) Preservation of original application form of each student in personal file.
- ii) Collection, verification, storage, preservation and return of original certificates.
- iii) Issuing a unique roll number depicting batch
- iv) Issuing an Identity Card (Hosteller/ Day Scholar with address)
- v) Maintaining retained documented information of registered courses (Number & Course Title)
- vi) Maintaining retained documented information of applicable scheme and syllabi.
- vii) Scheduling various classes/Time Table.
- viii) Maintenance of attendance retained documented information
- ix) Transferring grades earned in each subject to academic account and finally to transcripts of students.
- x) Compiling the retained documented information of courses cleared and grades obtained in the consolidation sheet for award of final degree to students.

Each department shall maintain identification & traceability of registered students in their respective disciplines and will have appropriate retained documented information.

8.5.3 Property Belonging to Customers or External Providers

The Institute shall exercise care with property belonging to customers or external providers while under the Institute's control or being used by Institute.

The Institute shall identify, verify, protect, and safeguard the customer's or external provider's property provided for use or incorporation into products and services.

It shall report to the customer or external provider when their property is incorrectly used, lost, damaged, or otherwise found to be unsuitable for use.

Customer property can include material, components, tools and equipment, customer premises, intellectual property, and personal data.

The Institute has made arrangements for verification, storage and maintenance of customer-supplied product, provided for incorporation into the supplies or for related activities.

The scope shall include:

- i) Items supplied by the customer (students) for evaluation.
- ii) Items supplied by the customer during consultation/testing/short term customized training programmes.

The responsibility for customer property is as under:

Items	Responsibility
* Original certificates	DR(A) & Registrar
* Tutorial & Home Assignments	Course Instructor/Tutors
* Laboratory Note Books	Laboratory Instructor
* Report of Project work	Project In charges
* Answer Books	Course Instructor, D.R. (A)

Arrangements have been made for the following:

- * Receipt, verification & return of original certificates.
- * Receipt, evaluation & return/preservation of laboratory note books, tutorials and home assignments.
- * Receipt, evaluation, return/preservation of mid semester tests and end semester examination answer books.

8.5.4 Preservation

The Institute shall ensure the preservation of “process outputs” during production and service provision, to the extent necessary to maintain conformity to requirements. Preservation can include identification, handling, packaging, storage, transmission or transportation, and protection.

The Institute has made arrangements for taking care of the students and their well-being by the following:

- i) Maintaining discipline in the campus including college, hostels and play grounds.
- ii) Making arrangements for games, sports and other facilities for keeping them in good health.
- iii) Making available the health center facility.
- iv) Counseling to students who need it.
- v) Maintaining hygiene in hostel messes, college canteen and water coolers etc.

8.5.5 Post-Delivery Activities

The Institute shall meet requirements, as applicable, for post-delivery activities associated with products and services. In determining the extent of post-delivery activities that are required the Institute shall consider

- a) risks associated with products and services;
- b) customer requirement;
- c) customer feedback;
- d) legal requirements;
- e) nature, use, and intended lifetime of products and services;

Note: Post-delivery activities can include actions under warranty provisions, contractual obligations (such as maintenance services) and supplementary services (such as recycling or final disposal)

8.5.6 Control of Changes

The Institute shall review and control changes for production or service provision to extent necessary to ensure continuing conformity with requirements.

The Institute shall retain documented information describing results of review of changes, personnel authorizing change, and any necessary actions arising from review.

8.6 Release of Products and Services

The Institute shall implement planned arrangements at appropriate stages to verify product and service requirements have been met. Retain evidence of conformity with acceptance criteria. The release products and services to the customer shall not proceed until the planned arrangements for verification of conformity have been satisfactorily completed unless otherwise approved by a relevant authority and, as applicable, by customer.

The Institute shall retain documented information for traceability to the person(s) authorizing release of products and services for delivery to the customer. The Institute shall also retain documented information for

- a) evidence of conformity with the acceptance criteria.
- b) traceability to the person(s) authorizing the release

8.7 Control of Nonconforming Process Outputs, Products, and Service

8.7.1

The Institute shall ensure process outputs, products, and services that do not conform to requirements are identified and controlled to prevent unintended use or delivery. The Institute shall take appropriate action based on nature of nonconformity and its impact on conformity of products and services. This is applicable also to nonconforming products and services detected after delivery of products during or after provision of service.

The Institute shall deal with nonconforming outputs in one or more of these ways:

- a) correction
- b) segregation, containment, return, or suspension of provision of products and services;
- c) informing the customer;
- d) obtaining authorization for acceptance under concession.

The Institute shall verify conformity to requirements when nonconforming process outputs, products, and services are corrected.

8.7.2

The Institute shall retain documented information that

- a) describes the nonconformity,
- b) describes action taken,
- c) describes concessions obtained,
- d) identifies the person or authority that made decision regarding dealing with nonconformity.

Documented information has been established to ensure that non-conforming students or items of physical infrastructure are prevented from further processing and that their control provides for identification, documented information, evaluation and disposition under intimation to all concerned.

The scope and responsibility for conduct of non-conforming product and services includes:

SCOPE	RESPONSIBILITY
1) Non-conformance identified during revision & verification of course design.	HEAD
2) Students' performance below the specified requirements during the instructional process.	HEAD, Chief Student Counselor, DOAA, DR(A)
3) Instructional delivery not conforming to specifications	Course Instructor, HEAD
4) Materials and services not conforming to the specified requirements	HEAD

Documented information include the following:

- i) Students whose performance is below the specified requirement are identified & listed separately. Documented information for identifying such students, referring them to counseling service and counseling them through designated counselors, HEAD, Course Instructor, DOAA, DOSA, Director has been established.
- ii) Feedback regarding conduct of courses is obtained from students through "Student Response Survey" conducted by DOAA each semester. A specially designed object oriented Performa is used for getting this feedback. Rating of faculty on course, instruction, tutorial, practical & misc. items is reported in descending order of instructions & feedback is sent to individual faculty member for improvement. Students are also encouraged to give informal feedback during instruction process. In addition, if any non-conformance is noticed during inspection or periodic audit of the process, the same is corrected.
- iii) Physical infrastructure if found non-conforming, is corrected or disposed of as per documented information.

Review and disposition of non-conforming product.

Documented information also address the aspects of review and disposition of the non-conforming product. The outline of this documented information is given below:

- i) The students whose performance has not been up to the mark are counseled, their performance discussed in the Heads Group meeting and a suitable corrective action taken which may include:
 - * Providing additional opportunities to improve and conform to requirements
 - * Termination of the programme.
- ii) Regarding non-conformance of instructional performance with the instructional design or non-conforming performance of the instructor, action is taken based on a documented information /norms & rules of the Institute. Actions entail giving feedback to the concerned instructor and/or planning and implementing a corrective action under intimation to Head.
- iii) Regarding physical infrastructure disposition of non-conforming product or service is carried out by taking up and examining the matter at the appropriate level. Action may include maintenance or rejection of goods or services.

9 Performance evaluation

9.1 Monitoring, measurement, analysis and evaluation

9.1.1 General

The Institute shall determine

- a) what needs to be monitored and measured
- b) methods for monitoring, measurement, analysis, and evaluation needed to ensure valid results
- c) when the monitoring and measuring shall be performed
- d) when the results from monitoring and measurement shall be analyzed and evaluated.

The Institute shall also evaluate the performance and effectiveness of the quality management system. It shall retain appropriate documented information as evidence of the results.

All academic retained documented information of the students are meticulously maintained by the academic section. The students' performance is monitored and graded as per the well-defined academic documented information. The performance is monitored by the Instructor on continuous basis and reported to the academic section at least twice in a semester. The students are graded by the Instructor at the end of the semester and this evaluation is analyzed of Board of Examiners (BoE).

9.1.2 Customer Satisfaction

The Institute shall monitor customer perceptions of the degree to which their needs and expectations have been fulfilled and shall determine the methods for obtaining, monitoring, and using this information.

Note : Monitoring of customer perceptions can include customer surveys, customer feedback on delivered products or services, meetings with customers, market-share analysis, compliments, warranty claims, and dealer reports.

The Institute has made arrangements to monitor information related to customer perception to ascertain whether the Institute has met customer requirements. The information is collected using the following established mechanism:

- a) Feedback from the students at the end of every semester on various aspects of the course taught to them.
- b) Feedback collected from the industry during the campus interviews.
- c) Feedback from students after they spend six months in industry for their project semester.
- d) Feedback from the six months project semester of the students, on the quality of students and their usefulness to the industry.

The information thus collected is summarized, and analyzed and the results of the analysis are used as a feedback to further improve the system.

9.1.3 Analysis and Evaluation

The Institute shall analyze and evaluate appropriate data and information arising from monitoring and measurement. Use the results of the analysis to evaluate

- a) conformity of products and services,
- b) degree of customer satisfaction,
- c) the performance and effectiveness of the quality management system
- d) if planning has been effectively implemented
- e) effectiveness of actions taken to address risks and opportunities
- f) performance of external providers
- g) need for improvements within the quality management system shall also be evaluated.

Note: Methods to analyze data can include statistical techniques.

The Institute has made arrangements to determine, collect and analyze appropriate data to demonstrate the suitability and effectiveness of the quality management system and to evaluate where continual improvement of the effectiveness of the quality management system can be made. This includes data generated as a result of monitoring and measurement and from other relevant sources. The analysis of data provides information related to customer satisfaction, conformity to product and service requirement characteristics, trends of products and services including opportunities for risk assessment and mitigation. Presently analysis of data is being carried out in the following areas:

Scope	Responsibility
Awarding grades	Instructor
Success rate	DOAA
Attrition rate	DOAA
Research Output Trend Analysis & Correlation	DRSP
Student Response Survey	DOAA
Analysis of effectiveness counseling	Functional Head
Campus Interview retained documented information and co-relation with students performance	Functional Head

9.2 Internal Audit

9.2.1

The Institute shall conduct internal audits at planned intervals (at least once in a year) to provide information on whether the quality management system

- a) conforms to
 - 1) the organization's own requirements,
 - 2) the requirement of ISO 9001:2015 standards
- b) is effectively implemented and maintained

9.2.2

The Institute shall

- a) plan, establish, implement, and maintain an audit program, which shall include frequency, methods, and responsibilities, planning requirements and reporting. While making an audit program, consideration shall be given to the importance of concerned processes, changes impacting the Institute and the results of previous audits.
- b) define audit criteria and scope for each audit
- c) select auditors and conduct audits for the impartial and objective audit process
- d) ensure the results of audits are reported to relevant management
- e) take necessary correction and corrective actions without undue delay
- f) retain documented information as evidence of audit program implementation and audit results.

The Institute conducts internal audits every year to verify whether quality management system conform to the established QMS and to determine that it is effectively implemented and maintained.

The scope covers all activities of the quality system affecting quality of instruction. The responsibility of scheduling internal quality audits lies with the MR. The arrangements made for conducting internal audits are:

- i) Documented information to define the responsibility and requirements for planning and implementing internal quality audits has been established and maintained.
- ii) The frequency of the internal quality audits has been decided based on the status and importance of the activity but in no case the frequency shall be less than once in a year.
- iii) The audit of an area/activity would be carried out by trained personnel other than those directly responsible for the said activity.

- iv) The results of the internal quality audits are recorded and report is given to concerned functional Head.
- v) Timely action on the reported non-conformities is planned and taken by concerned functional Head.
- vi) Follow-up audit is conducted in-order to verify and record the implementation and effectiveness of the corrective action(s) taken.
- vii) The results of the internal quality audits are sent to MR for management review and record.
- viii) The selection of auditors and conduct of audits is made so that it ensures the objectivity and impartiality of the audit process. Auditors do not audit their own work.

MONITORING AND MEASUREMENT OF PROCESS

The organization applies suitable methods for monitoring and measurement of processes of quality management system. This monitoring and measurement demonstrate the ability of the processes to achieve planned results. The established methods include:

- i) Maintenance of course files by every teacher. The checklist of the documents to be attached and their order is prepared.
- ii) Filling up of course coverage Performa by each teacher and its counter checking by head of the department.
- iii) Surprise checks by HOD and other officers to ensure that classes are held.

Monitoring and measurement of product

The Institute has made arrangements for evaluating and meeting the specified requirements for students at entry, during the instructional process and finally before qualifying for award of degree as well as for other physical infrastructure so that accepted students, instructions & materials are processed further.

The scope and responsibility for monitoring and measurement of product and services is as under:

Scope	Responsibility
1) Students:	DOAA, HOD
* Entrance/diagnostic examination	
* Continuous evaluation as conducted during the process.	DOAA, Course Instructor
* Summative evaluation at the end of the Instruction	D.R.(A)
2) Physical infrastructure	HOD
* Inward and in-process inspection	

Entrance/Diagnostic Examination

Admissions to various undergraduate are made through JEE/(10+2 score) and post-graduate programmes through an entrance/diagnostic examination. Eligibility information for each programme is contained in the Institute Regulations and also in the Information Brochure issued every year.

Formative evaluation as conducted during the Instruction Process

The Instruction Process shall be reviewed & verified for adequacy. Continuous evaluation of students shall be carried out through examinations and/or other modes during delivery of instructions.

The evaluation process shall include:

- i) Audit plan to ensure that instructors & tutors follow a laid down plan for imparting instructions.
- ii) Mid semester test, announced or unannounced quizzes and practical viva-voce examinations.
- iii) Evaluation of home assignments, laboratory work, tutorial work and participation in class discussion/seminars
- iv) Final/End Semester Examination conducted for all undergraduate & post graduate courses in which student is registered each semester as per established documented information.

Summative evaluation at the end of the instruction process

A check list performs has been established and is used to review and verify that the students have completed (fulfilled) all requirements for the award of degree.

Inspection of physical infrastructure at inward/in-process stage

Inspection of all physical infrastructures procured by the Institute for use in instructional process or for further processing shall be carried out as per documented information.

9.3 Management Review

9.3.1 General

The Top Management of the Institute shall review the Institute's QMS at planned intervals (once in a year) to ensure it's continuing suitable, adequacy, effectiveness and it shall be aligned with the strategic direction of the Institute.

9.3.2 Management review inputs

The Management Review shall be planned and carried out considering

- a) status of actions from previous management reviews,
- b) changes in external and internal issues relevant to QMS,
- c) adequacy of resources
- d) opportunities for improvement
- e) effectiveness of actions taken to address risks and opportunities
- f) information on quality performance and effectiveness , including trends in
 - 1) non conformities and corrective actions,
 - 2) customer satisfaction and feedback from relevant interested parties,
 - 3) monitoring and measurement results,
 - 4) audit results,
 - 5) extent to which quality objectives have been met,
 - 6) process performance and conformity of product and services,
 - 7) the performance of external providers

9.3.3 Management review outputs

Outputs from the management review shall include decisions and actions related to

- a) opportunities for improvement,
- b) any need for changes to QMS,
- c) resource needs.

The Management Representative shall retain documented information as evidence of the results of management reviews.

10 Improvement

10.1 General

The Institute shall determine and select opportunities for improvement and implement any necessary actions to meet customer requirements and enhance customer satisfaction.

These actions shall include

- a) improving products and services to meet requirements, as well as, address future needs and expectations;
- b) correcting, preventing, or reducing undesired effects;
- c) improving the performance and effectiveness of the quality management system.

Note: Examples of improvement can include correction, corrective action, continual improvement, breakthrough change, innovation, and reorganization.

The Institute, through feedback from the employing organisations, has determined the opportunities for improvement in the following:

- updating the curriculum as per the industry demands
- provision for improving soft skills like communication skills, team work, social empathy, leadership traits etc.
- provision of rigorous hands on experience through projects and experiential based learning

Continued efforts are made at every level, through curriculum revision, improvement in teaching learning process and through dedicated sections like centre for training and development.

10.2 Nonconformity and Corrective Action

10.2.1 When a nonconformity occurs, including any arising from complaints, the Institute shall

- a) react to the nonconformity and, as applicable
 - 1) take action to control and correct it;
 - 2) deal with the consequences.
- b) evaluate the need for action to eliminate the causes of the nonconformity so it does not recur or occur elsewhere, by
 - 1) reviewing and analyzing the nonconformity,
 - 2) determining the causes of the nonconformity
 - 3) determining if similar nonconformities exist, or could potentially occur.
- c) implement any action needed
- d) review the effectiveness of any corrective action taken;
- e) update risks and opportunities determined during planning, if necessary
- f) make changes to the quality management system, if necessary.

The corrective actions shall be appropriate to the effects of the nonconformities encountered.

10.2.2 The Institute shall “retain” documented information as evidence of

- a) the nature of the nonconformities and any subsequent actions taken
- b) results of any corrective action.

The Institute takes action to ensure that the recurrence of non-conformities or discrepancies, which are reported to have occurred at some point of time or which are likely to occur, are prevented. This is ensured by analysing the problem, finding its root cause and eliminating it.

The scope includes:

Scope	Responsibility
1. Customer (students) complaints/suggestions/ comments	Head/DOAA
2. Success/Failure rates	DOAA/Head
3. Non-conformities reported in instructional design and/or delivery	Head/DOAA/D irector
4. Non-conformities in use of physical infrastructural facilities	Head/DOSA/R egister
5. Non-conformities as a result of Internal Quality Audit	MR

Documented information has been established for the following:

- i) To handle customer (students) complaints, suggestions & comments, feedback from instructors, other sources like industries, companies coming for campus recruitment companies, etc. and reports regarding product and services non-conformity, if any.
- ii) To review the non-conformity and investigate the cause of reported non-conformities and recording the results of the investigation.
- iii) To evaluate the need for action, determining and implementing the decision to take corrective action effectively in-order to eliminate the cause of non-conformities and recording the results.
- iv) To apply controls in-order to ensure non-recurrence of reported non- conformities.
- v) Review the effectiveness of the corrective action taken.

It is ensured that the corrective action is in conformity with the degree of the problem and commensurate with the risks involved.

The action may include revision or discontinuance of a course, replacement of an instructor/tutor, if warranted, change in instructional schedule if necessitated and delivery methodology etc.

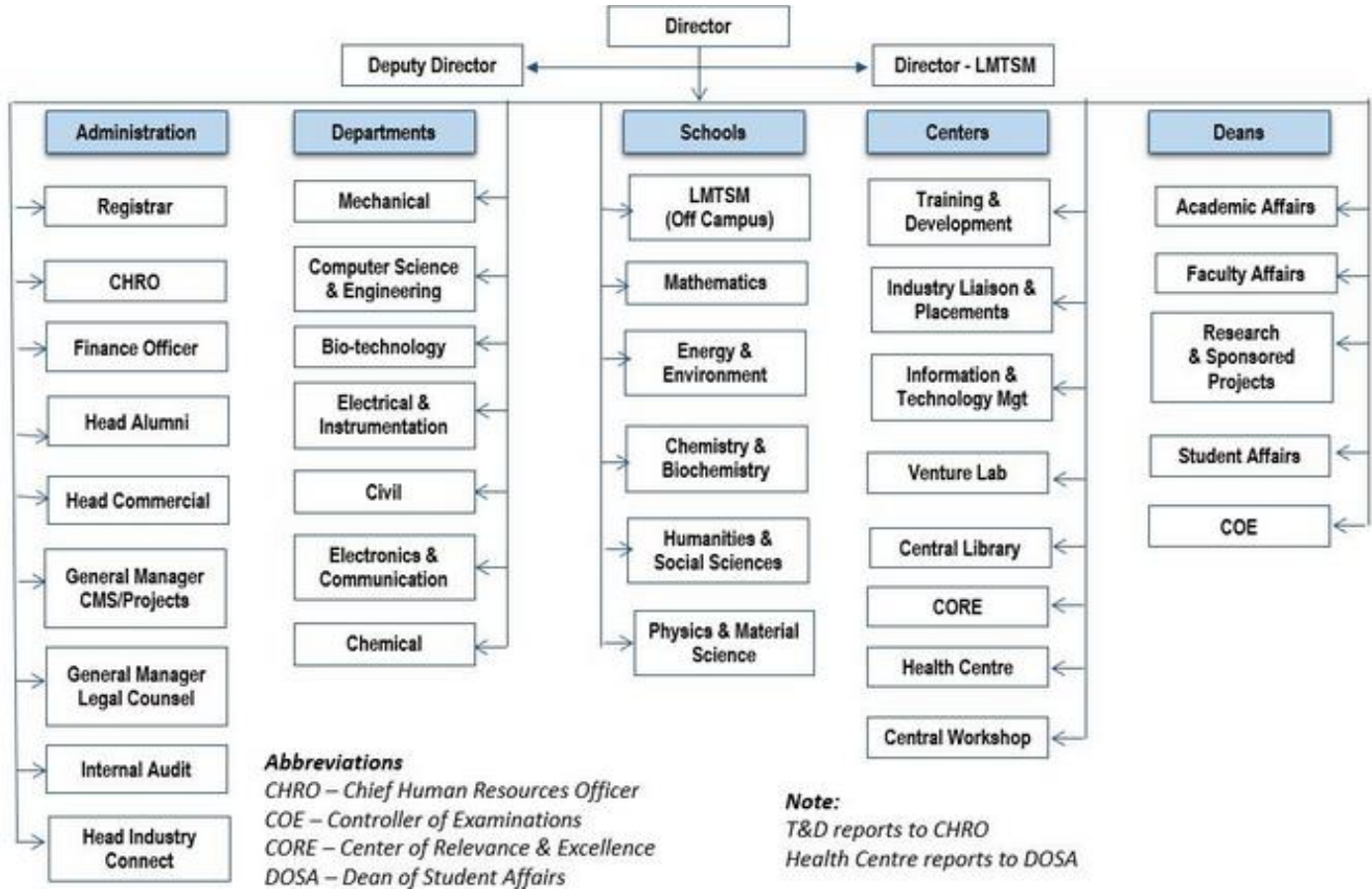
10.3 Continual Improvement

The Institute shall continually improve the suitability, adequacy, and effectiveness of the quality management system. The Institute shall consider the results of analysis and evaluation, and the outputs from management review, to determine if there are needs or opportunities that shall be addressed as part of continual improvement.

The Institute continually improves the effectiveness of the quality management system through the use of quality policy, quality objectives, audit results, analysis of data, risk assessment and mitigation, and management review. At the time of every management of review, through the measure of each objective and its comparison with earlier level of that objective, the trends are ascertained. Action points are then listed to continually improve the system. The status is reviewed in the subsequent management review meetings.

ORGANIZATIONAL STRUCTURE

Annexure 1



Flow Chart for Teaching Activity

Annexure II

