



**Detailed Project Report
for
Grant of
Deemed to be University
under
De Novo Category**

**Submitted to
University Grants Commission, New Delhi
by**

**National Institute of Technical Teachers Training and Research
Chandigarh**

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1967

NITTTR



TTTI to NITTTR



National Institute of Technical Teachers Training and Research Chandigarh is one of the four Technical Teachers Training Institutes, setup in 1967, by Ministry of Education in collaboration with the Royal Netherlands Government. These regional Institutes were setup in realization of the need for producing quality teachers for technician education system to meet the large scale industrialization of the country. Initially, the Institute at Chandigarh catered to requirements of developing polytechnic education in the northern region. The Institute is registered under the Societies Registration Act XXI of 1860 and is managed by Board of Governors. Starting with design of curriculum and training of Polytechnic teachers in implementing the designed curriculum, the Institute expanded its activities by gradually adding new areas to meet the growing requirements of the Polytechnic System. The institute started with long term training programmes for polytechnic teachers in 1967 and was also entrusted with the responsibility of promoting curriculum development work for the states in the northern region.

With the growth and expansion of the technical education system, the academic programs and other activities of the Institute underwent changes to keep pace with the changing requirements and the institute started offering programs for Master of Engineering and Ph.D.

To improve the competence of teachers for implementing new curricula designed by this institute, short term courses have been offered since 1967. Establishing 14 departments/centres, the Institute activities expanded to Education and Training, Curriculum Development, Instructional Material Development, Research and Development and Extension Services and Consultancy in Technical Education and Technology areas by the year 1985.

Appreciating the contributions of the four Technical Teacher Training Institutes to technical education system and expansion of technical education resulting in increased requirement of training of Faculty of Technical Institutions, Government of India brought all technical education institutions/universities offering Diploma, UG and PG programmes under the purview of the four institutes and the Institutes were renamed as "National Institute of Technical Teachers Training and Research" in 2003.

Our Vision, Mission and Values

Our Vision

To be a lead resource institute for promoting excellence in Technical Education System

Our Mission

- *To offer continuing education and training programs for quality improvement in technical education.*
- *To develop and follow flexible need based curricula to produce socially responsible, creative and innovative manpower.*
- *To develop online/web based instructional material to enhance effectiveness in teaching learning process.*
- *To undertake multidisciplinary research in engineering and technology and technical education.*
- *To provide extension and consultancy services to technical education system and industry at National and International level.*
- *To build a bridge between academic, research institutions and industries at National and International level.*
- *To inculcate values and ethics in thought, expression and deed.*

Our Core Values

Quality

Focus on standards of performance and continuous improvement

Professionalism

Demonstrate performance with highest standards of ethical behavior, intellectual honesty and professional conduct

Accountability

Own responsibility for academic work

Innovation

Promote and encourage creativity

Collaboration

Encourage and support networking, within and outside the institute, at National and International level

Transparency

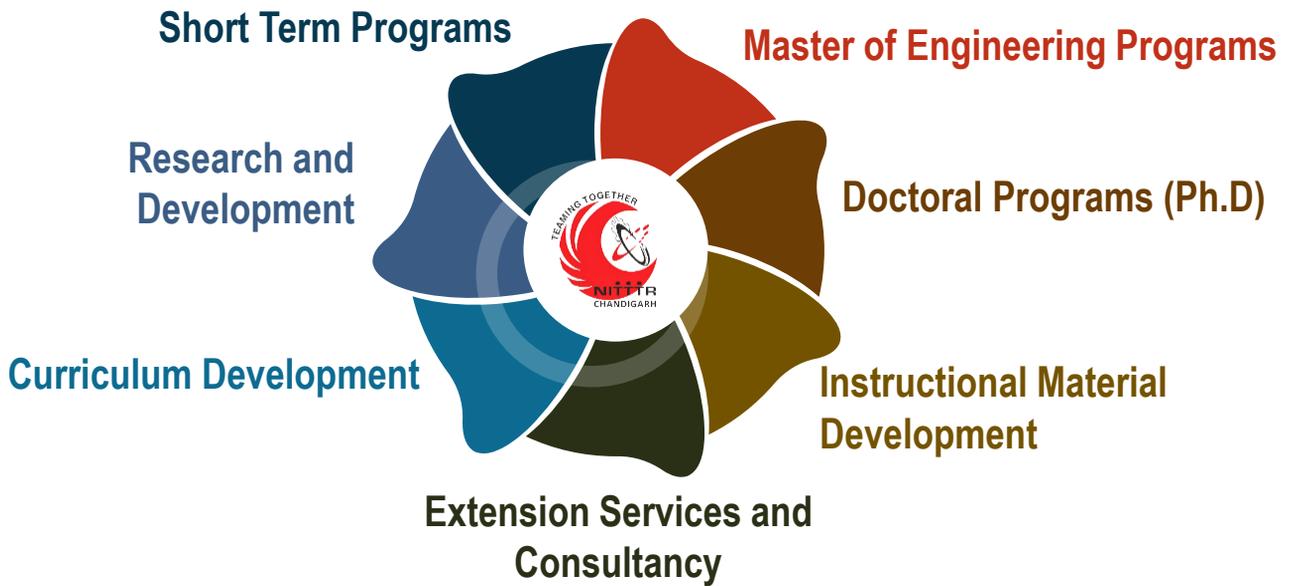
Ensure openness in policies, rules and regulations and working

QUALITY POLICY (ISO 9001-2015)

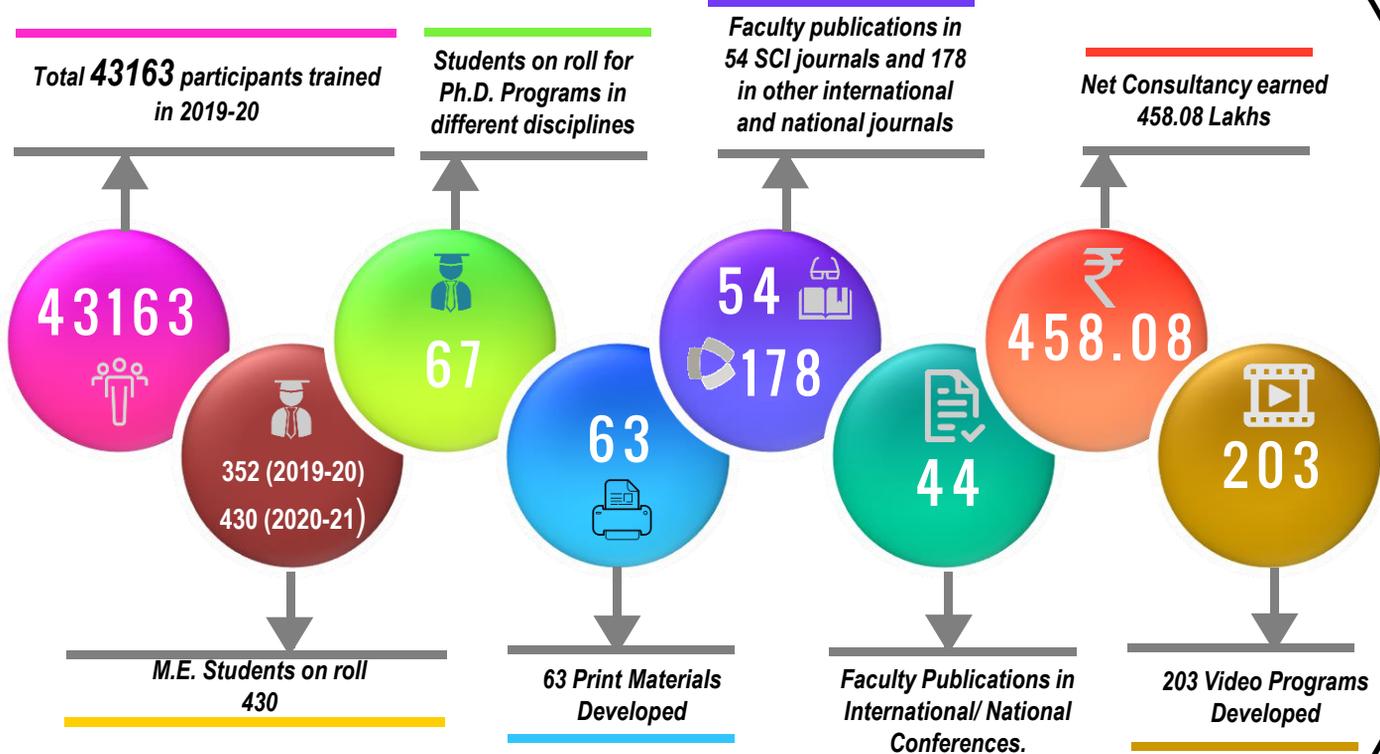


Institute is committed to provide high quality and customized education, training, research and development and extension services to technical and vocational education system, industry and community. The institute shall develop leadership in technical teachers' training and provide educational products and services to enable the technical education system to achieve excellence internationally.

Current Activities:



Achievements (2019-2020)



Faculty and Staff Development:

Faculty Development Programs: Training Programs in pedagogy and engineering and management areas.

1

PG Programs: Master of Engineering Education, Mechanical Engineering (Manufacturing Technology), Civil Engineering (Construction Technology and Management), Computer Science and Engineering, Electrical Engineering (Instrumentation and Control) and Electronics and Communication Engineering. From the academic session 2020-2021 AICTE has approved three Master of Engineering programs in Mechanical Engineering (Robotics), Electronics and Communication Engineering (Artificial Intelligence) and Computer Science and Engineering (Internet of Things). For all these programs the Institute is affiliated to Panjab University Chandigarh.

2

Doctoral Programs (Ph.D): Institute is a Research Centre of Panjab University Chandigarh and I. K. Gujral Punjab Technical University Jalandhar for Doctoral Research.

3

Master of Engineering Programs and Ph.D. programs under QIP scheme of AICTE

4

Curriculum Development: Institute caters to the curriculum development and revision needs of the technical Institutions/Boards. Institute has expertise in developing curriculum for Outcome Based Education. The Curriculum developed/revised by the Institute is aligned to NSQF.

5

Instructional Material Development: Institute develops "Print and Non-Print" Instructional Material in the form of Books, Readers, Laboratory Manuals, Educational Video Films, CAL packages and MOOCs for SWAYAM.

6

Research and Development: In addition to undertaking research in engineering and management areas, Institute faculty works in systemic research in technical education system.

7

Extension Services and Consultancy: The faculty of the Institute provides services to MoE, AICTE, NBA and other Central/State Government organizations.

Summary of the activities undertaken by the Institute in the last five years is annexed at Annexure-I.

Accreditation of Institute Programs

- Accredited as Laboratory Management System Training Institute by National Accreditation Board for Education and Training (NABET), Quality Council of India.
- PG Programme M.E. (Computer Science & Engineering) got NBA Accreditation for 5 Years
- PG Programmes M.E. (Electronics and Comm. Engineering) and M.E. in Electrical Engineering (Instrumentation and Control) got NBA Accreditation
- PG Programme of Civil Engineering is in the process of applying NBA Accreditation.



Review of NITTTR Chandigarh :

Highlights of Review Reports

High level committees constituted by Government of India have reviewed the working of NITTTR Chandigarh. While appreciating the contribution made by the institute at national level, Hon'ble Chairpersons and Members of the committees have recommended the up-gradation of NITTTR Chandigarh to provide flexibility to the Institute to offer value added programs. Some of the recommendations of the review committees are as under:

Significant Observations and Recommendations

**Prof. D. Acharya
Committee
[2006]**

- The institute will have to bring in changes in the programmes and activities to build in capability and capacity in the technical education system and industry to respond to the changes in the world of work. The focus would be to emerge as the centres of excellence in the area of technical teachers' training and research.
- Education and training should continue to play a significant role in developing the professional capabilities among teachers and staff for training technical manpower for meeting the changing industrial requirements as well as updating knowledge and skills of working professional from industry.
- Research in the area of technical education needs to be strengthened in order to ensure sufficient decision making by personnel working at different levels namely policy makers, administrators, teachers etc. Likewise, research is needed at the level of NITTTRs to improve the quality of programmes and services being offered by them.
- NITTTRs should design competency based curricula at certificate, diploma, post/advance diploma, degree and post-graduate degree levels in emerging areas in tune with the requirements of the world of work. To design competency based curricula, competency profile of technical manpower should be developed and upgraded at regular intervals.
- In order to implement ICT enabled training programmes and provide required instructional resources to technical institutions, high-tech instructional resources like interactive educational video programmes, computer aided learning packages and multi-media software would be required in addition to conventional print and non-print media. The institute should build up the capacity and competence among the faculty to develop these instructional resources.
- Committee observed that there has been a steady growth in number of programmes as well as number of persons trained during the last three years.

Significant Observations and Recommendations

Nine-Member Parliamentary Committee [2002]

- Hon'ble Chairman of the Committee Dr. Alladi P. Rajkumar and all Hon'ble Committee Members expressed their appreciation of the excellent work done and the overall performance of the institute in the field of technical education and congratulated TTTIs for their achievements.

Prof. P.V. Indiresan Committee [2000]

- The four TTTIs during the last 30 years have successfully intervened and implanted many new ideas and innovations in the polytechnic education system. The experience and expertise available with the TTTIs must be made available to the entire gamut of technical and vocational education and management education.
- For optimum utilization of the facilities and expertise in TTTIs, it is necessary that the Govt of India formulate a National Policy on training teachers of institutions and identify the role of TTTIs in this national framework.
- The committee feels that to improve the performance and productivity of TTTIs, it may be desirable to update them as National Institutes from their present form and regional status. This will generate healthy competition among TTTIs and will bring out the best efforts from them. While training continues to be the focus of TTTIs, they, at present, play roles over a much wider spectrum of services to the polytechnic system. Even the Jha Committee (1978) has considered that TTTIs should spend 50% of their time in training and the remaining 50% in curriculum development, instructional material development and extension services. Taking into account this wider role of TTTIs, the Committee feels that their present name does not reflect the true role of TTTIs. They must be renamed as "National Institute of Technical Education and Research".

Significant Observations and Recommendations

Prof. Amitabha
Bhattacharya
Committee
[1991]

- TTTIs should offer highly flexible, credit based modular training programmes with alternate delivery systems leading to award of a Certificate, Diploma, Degree and Post-Graduate Degree to suit the demands of changing context of technician education system. Long horizon teacher training programmes should be the main thrust and TTTIs should develop, degree, post-graduate and fellowship programmes in technical education. These are different in style and content from the regular engineering degree courses, in that these would address the complex competency needs of a professional technical teacher. These qualifications should be recognised for career benefit and financial incentives as per requirement by the AICTE.
- Continuing education of technical personnel in the field has been recognised as a necessity for the modernisation of the industries and HRD. TTTIs should pool their expertise and resources in the national endeavour in a significant way.
- TTTIs should be recognised as Nodal Point for innovation in technical education with powers for awarding degrees and fellowship.

Conclusive Recommendation

Finally, in order to ensure development of the Polytechnic system to effectively respond to the engineering and technology manpower requirements through appropriately trained teachers supported by an appropriate management system manned by professionally trained persons TTTIs must operate at the level and within a scope which enables them to provide the necessary professional and academic support to the technician education system through activities mentioned above. This is possible only if the TTTIs have the necessary built-in flexibility, authority and status. This calls for their being designated as Deemed Universities with a name more truly reflective of their role and their status e.g. "The Institute of Technical Education and Research".

[To review the staff requirement and staff structure]

Significant Observations and Recommendations

- Committee felt that ideally 50% effort of the TTTIs should be distributed to Training Programmes; 30% to Curriculum Development and 20% to Supporting Activities including Staff Development
- Committee recommends that full time training facilities may be offered to teachers of other countries under the cultural exchange programmes.
- Committee is convinced that subject competence development and updating continues to be important in the context of polytechnics education in the country. It endorses the view of the Review Committee that to get maximum impact, non-formal methods could also be employed for subject updating.
- Committee is glad about the development of many new ideas in technical education in the TTTIs like micro-teaching, competence based training, learning and resources centres etc., and recommends that although these activities should be done in the initial stage by the existing faculty, a proper evaluation of the needs for sustaining them should be made once they are well established.

**Prof. C.S. Jha
Committee
[1978]**

- The institutes have made a mark for themselves in the field of technician teacher education in the country.
- Training in pedagogy has been very effective and brought about a great appreciative awareness. Industrial training also has earned almost equal appreciation. However, training in these two elements can be in modular form of 12 weeks duration, each to be taken up as a unit, but not necessarily in sequence.
- Specially designed six months programmes for science teachers of polytechnics should be arranged.
- The impact of the institutes has already been felt considerably in the area of educational services, even though these services were not specifically contemplated

**Prof. Kelkar
Committee
[1975]**

Significant Observations and Recommendations

when the Institutes were started. More efforts in a well-thought out planned manner in this pioneering area, with specific short-term and long-term objectives have to be organised in the four institutes.

- However, in view of the contemplated enlarged and the substantial need for coordination, a coordination council for the four institutes should be set up.

Prof. Kelkar
Committee
[1975]
(contd..)

Major Recommendations of Review Committees

- ❖ Deemed to be University Status for NITTTRs.
- ❖ Need for offering Certificate, Diploma, PG Degree and PhD degree programmes established.
- ❖ Strengthening of NITTTRs in terms of faculty and resources.
- ❖ Inter-NITTTR working, sharing of expertise and coordination body at national level.



15 YEARS STRATEGIC PLAN

Vision and Mission (Proposed)

Vision

To be a lead resource and research institute for promoting integrated development of multidisciplinary technical education system globally.

Mission

- *Offer quality education and training programs with inbuilt flexibility.*
- *Develop and implement demand driven curricula to produce socially responsible, creative and innovative manpower.*
- *Develop educational products to enhance effectiveness in online teaching learning process.*
- *Undertake multidisciplinary research in engineering and technology, management and engineering education by setting up centers of excellence in identified areas.*
- *Provide consultancy and extension services to industry and other organizations.*
- *Build strong linkage with International organizations.*
- *Inculcate values and ethics in theory and practice.*

“

The 15 years strategic plan envisions the development of the Institute, as “Deemed to be University” to meet the needs of the technical education system in view of the changed scenario with more focus on use of ICT in the teaching-learning process. This plan incorporates the new aspects enumerated in the “National Education Policy (NEP 2020)” to offer more meaningful education to provide employable skills to the students passing out from the Institute. Being National Institute of Technical Teachers Training and Research, the major focus of the Institute will remain to improve the quality of existing faculty and technical staff in the technical education system and conduct programs directed towards making available qualified engineering teachers by offering multi-disciplinary PG programs in engineering, management and emerging technology embedded with pedagogical aspects and other qualities required of a teacher.

Specific objectives of the 15-year perspective plan are:

1. To become preferred university offering teacher focused multi-disciplinary programs.
2. To produce PG and Ph.D. graduates with enhanced complex problem solving skills.
3. To offer programs in flexible mode to serve large clientele.
4. To establish centers of excellence in selected areas of engineering and technology with industry collaboration.
5. To provide programs with multipoint entry and multipoint exit option.
6. To cater to training needs of technical teachers of neighboring countries.
7. To focus on research in emerging areas of engineering and management.
8. To conduct programs for working professionals.
9. To develop educational products for integrating technology into teaching learning process.
10. To work on rural focus technology.
11. To work as enablers for Startups.
12. To conduct action research for quality education.

15 Years Strategic Vision

In the next 15 years, the Institute plans to align its activities to achieve the following goals:

- a) Emerge as global institute for diversified online degree/diploma programmes.
- b) Offer demand driven and need based education and training programmes with integrated advanced pedagogical aspects leading to award of specific degrees/diploma.
- c) Offer training programs for industry professionals.
- d) Evolve as one-stop institute of excellence to provide multi-disciplinary education, training and research.
- e) Be a lead institute in offering Post-Doctoral Research, Doctoral and Masters' degree programmes in cutting edge technologies and pedagogical tools.
- f) Offer flexible and credit mapped degrees and diplomas in diversified fields with adaptation of ABC of NEP 2020.
- g) Be a repository of digital resources for technical education system.
- h) Provide expert services in design and review of OBE based NSQF compliant curriculum for engineering and professional programmes.
- i) Collaborate with national/international organisations/universities for faculty, staff and student exchange for global exposure for world class manpower development.
- j) Undertake sponsored research and development projects.
- k) Take up industrial projects to provide industrial solutions, enhancing faculty expertise and revenue generation.
- l) Conduct programmes for international students and faculty/staff.
- m) Provide educational products to the technical education system.
- n) Guidance in re-engineering of technical education Institutes and technical education system.

- o) Undertake academic audit for institutional excellence.
- p) Conduct programs based on community and society needs.
- q) Facilitate patenting and spread awareness about IPR.
- r) Development of educational media and provide media development services.

Academics is the heart and soul of any academic institution. The academic scenario in the country as well as globally is changing rapidly with technological exclusivity in terms of specializations getting blurred and more and more focus being on interdisciplinary education, training, and research. With most industrial and technological innovations being a blend of engineering and cutting-edge technologies like Artificial Intelligence, IOT, Robotics, Embedded Systems, gaming and bio engineering, it has become imperative for a national resource institute like NITTTR, aspiring for a deemed to be university status, to take a lead in training manpower and fostering research and innovation in these areas of study. Further, in the NEP-2020 a lot of emphasis has been laid on multidisciplinary approach wherein it has become imperative for NITTTR to expand its horizon to include non AICTE institutes under its training umbrella. The 15-year academic plan has been formulated to cater to national needs and expand the activities of NITTTR beyond national boundaries by offering our academic and training expertise to other third world countries.

1

Enhancing the present quality and quantity

The quality of engineering teachers is a cause of serious concern. The ineptitude of teachers reflects on the skills learnt by their students leading to a vicious circle wherein the technical education scene has become mired in mediocrity. To break this self-defeating cycle, NITTTR Chandigarh has planned to enhance both the quality of serving teachers and prospective teachers. Over the next 15 years NITTTR plans to offer quality programs in terms of short-term trainings, lab based trainings, and academic programs with a lot of inbuilt flexibility so that the clientele can take advantage of the facility by learning at their own pace and style leading to maximum outcome. The salient features around which these programs from certificate level to doctorate level are designed include multiple entry multiple exit, account book of credits, and blended mode of instruction with

lot of emphasis on real life projects, and higher order thinking skills. A good, high-quality education is to do with outcomes. It is a result of learning, which is a visible and observable demonstration of three main things—knowledge, combined with competence, combined with orientations. It is these three factors that determine the quality in higher education and which shall be at the core of NITTTR's academic plan.

At present because of the affiliated system with its inbuilt inflexibilities, limited number of programmes are being offered and number of regular students enrolled at NITTTR, Chandigarh is also less. For the 15 Years perspective plan, the intake of 800 fresh students in the initial years in different academic programmes of the Institute is expected leading to nearly 2000 students per year. With the conferment of Deemed to be University status and consequent enhancement in faculty and student strength, the institute shall strive to get assessed by national and international assessment/accreditation agencies (like: NIRF, NBA, NAAC, ABET). Achievement of quality certifications shall enhance branding and give further impetus to enrolment and interactions.

For ensuring quality, the credit-based training programmes in emerging areas will be imparted. Along with these following two major steps will be taken:

- Blended MOOCs programmes leading to degree/diploma/ certificate in emerging areas like Data Science, Biological Engineering, Infrastructural Engineering, Industry 4.0, Sustainable Engineering, Robotics and Cybernetics, Cyber Security, Additive Manufacturing, Smart Engineering, Artificial Intelligence, Augmented Reality, Virtual Reality, Gaming and other demand driven areas.
- Foundation level training programmes to Assistant Professors, advanced content training programmes to Associate Professors, Leadership programmes to Professors in contact mode/blended mode/MOOCs.

- Forecast changes in technological advancements and offer change based training programmes
- Real life training through industrial attachment
- Training leading to credits
- For credit based training programmes : ½ credit for 1-Week course
- For blended mode /MOOCs: Credit transfer as per AICTE/SWAYAM Norms
- Passbook of credits leading to certification [ABC as per NEP 2020]
- Earned certifications through training leading to Degree/Diploma
- Choice Based Credit System (CBCS) based curricula leading to Outcome Based Education (OBE)
- NSQF compliant curricula

Launching of New Academic Programmes

Master Degree programmes

a) For potential technical teachers

- **Master Degree-Parallel (Advanced pedagogy for aspiring teachers):** For students pursuing Masters degree programme in engineering from institutes of National Importance like IITs, IISC and NITs.
 - Offered through MOOCs and
 - Winter and summer internship of 15 days each at NITTTRs
 - Need based industry driven curricula
- **Master Degree-Bridge (Advanced pedagogy):** For students pursuing Master's degree from institutes/Universities other than INIs.
 - Offered through MOOCs and
 - One semester core subjects course work in Contact mode
 - Need based industry driven curricula
- **1 or 2 years Regular Master's degree programme (Advanced Pedagogy):** For B.E/ B.Tech pass outs
 - CBCS based curricula leading to OBE
 - Need based industry driven curricula
- **1 or 2 years Regular Master's degree programme (Engineering, Management and allied areas):** For B.E/ B.Tech pass outs
 - CBCS based curricula leading to OBE
 - Flexible with multi point entry and exit
 - Interdisciplinary programs
 - Need based industry driven curricula

b) For Corporate Professionals

- Master's degree for corporate professionals in blended mode/MOOCs
- Need based industry driven curricula
- RPL (Recognition of prior learning) and credits earned from industry experiences

c) International Exchange Master Degree Programme

d) Certificate Programme in Educational Pedagogy (for in-service technical teachers)

- Blended mode/MOOCs

Ph.D Programmes

- AICTE-QIP Ph.D. programmes for Engineering and Polytechnic teachers
- 4 or 5 year integrated research focused programme (1 or 2 years M.E. + 3 years Ph.D. with fellowship)
- Regular full time Ph.D. programmes
- Industry/other organisations attached Ph.D. (for working professional)
- Ph.D programme through Fellowship
- Exchange Ph.D. Programmes
- International Student Ph.D. Programmes

MBA/PhD Programmes in Entrepreneurship

Doctor of Science (D. Sc.), Doctor of Letters (D. Lit.)

On-Line Inclusive Programmes

- Student selective programmes
- International Students Programme.
- Hybrid degree (Engineering with law/finance/ traditional technology/ natural medicine etc.)

Under the De Novo category, the following unique PG programmes are proposed to be launched by various departments as inter disciplinary courses. While 5 of them shall be launched from 2021-22, the remaining shall be rolled out in the subsequent years.

Unique PG Programmes Proposed to be Launched in First Phase

- Digital Kinematics for Organizational Resilience
- 3D/4D Printing, Innovative Design and Production
- Cognitive Systems
- AR/VR and Digital Game Design
- Sensor, Data and IoT System Management
- Drone and Unmanned Airborne System Technology
- IIoT and Industrial Robotics
- Nanophotonics

The curricula of the proposed programmes are presented in **Annexure-II**.

Besides the above mentioned unique inter disciplinary courses, the departments have also proposed their individual academic plans as given in the subsequent sections.

The institute plans to start new Masters' and PG-diploma programmes with the following specialisations:

Applied Science: The department was established along with the inception of this institute in 1967, and has the current faculty strength of two Professors, one Associate Professor and one Assistant Professor. The department conducts short-term courses in emerging areas of Applied Science- Applied Physics, Applied Chemistry, Applied Mathematics, etc. It has well equipped laboratories: Applied Physics, Laser & Fiber Optics, Optical Fiber Communication and Nanoscience & Nanotechnology. These laboratories have latest equipments like He-Ne and Semiconductor lasers, Advanced laser kits, Fiber optics trainers, OFC system design and simulation softwares, Radiation detectors & counting systems, Ultrasonic interferometers, Atomic Force Microscope, Spectrophotometer in addition to conventional experiments in physics for graduate and post-graduate courses. The department has published text-books in Applied Physics and Applied Mathematics, undertook research studies and developed many teaching-learning modules in selected areas. Some video films have also been prepared on selected topics by the faculty of this department. The Department is planning to start the following programmes in the span of 15 years.

- M.Sc. in Physics (Specialization in Nano-photonics)
- PG Diploma in Energy and Sustainability
- Ph.D. in newer areas
- Post Doctoral Research

Computer Science and Engineering: Accredited by NBA for 6 Years. Excellence in teaching, research and technology development is the vision of the department of Computer Science and Engineering. Department of Computer Science and Engineering since its establishment in 1982, progressed steadfastly to its present status of being reckoned as a leader in Computer Science and Engineering education. The department is currently having seven Computer Laboratories. All laboratories are equipped with high end computers. Besides this the department is equipped with high end servers and related networking equipment to provide the internet connectivity in the whole campus. The department also maintains the wired and wireless connectivity in the Institute premises as well as residential campus. Various software related to Multimedia, Web Application Development, Network Simulation, Digital Image Processing, Cloud Computing, Databases and other Application software are available with the department. Department is actively involved in conducting short term training programmes in the upcoming areas such as Big Data Analytics, Machine Learning, Python Programming, Cyber Security, Penetration testing and malware analysis, Cloud Computing, MATLAB Programming, Scilab Programming etc. for the faculty and staff of Polytechnics and Engineering colleges. The Department also offers Master of Engineering (Regular & Modular) in Computer Science & Engineering for teachers of Polytechnics, Engineering Colleges, Officials of Directorate of Technical Education & industry professionals.

In the year 2020, the department started ME CSE (specialization in IOT). Further, department also offers Ph.D. programme in the area of Image processing, Wireless Network, Mobile Adhoc Networks, Network Security, Cloud Computing etc. The department is running two sponsored projects from MeitY, New Delhi and AICTE New Delhi. The department also completed one MODROB Project sponsored by AICTE in 2019. Under these projects, the department established Advanced Cyber Security Laboratory and IOT Laboratory. ME in Computer Science and Engineering – Currently -running, ME in Computer Science and Engineering (Internet of Things). **The Department is planning to start programmes in the span of 15 years.**

- ME in Computer Science and Engineering (Cyber Security)
- ME in Data Analytics
- PG Diploma in Cyber Security and Mitigation Techniques
- PG Diploma in Emerging Engineering Pedagogy with AR/VR Systems
- Advanced Certificate course in cloud applications
- Advanced Certificate course in animation
- Advanced Certificate course in gaming
- Advanced Certificate course in python programming
- Ph.D. in newer areas
- Post Doctoral Research

Civil Engineering: With large volume of consultancy activities, Civil Engineering Department is one of the major departments, created since the establishment of the institute, progressed steadfastly to its present status of being reckoned as a leader in Civil Engineering Department. The department is currently having **nine** state of art Laboratories with approximately **60** high-end desktop computers. It grooms teachers of Polytechnics and Engineering Colleges in this Field using new-age information and computer intensive technologies. Various software such as Space Gass, ABAQUS, ETABS, MI-Power, STAAD Advanced, Bentley Products, MIDAS GTS Software, Primavera Project Planner, MX Road Auto CAD along with its hardware interface on research projects are available with the department. The department has produced a large number of instructional materials both print and non-print for the benefit of teachers and students of technical institutions. The department has also produced various video films, charts and experimental kits on topics pertaining to Civil Engineering. Department is actively involved in conducting need based short term training programmes in the upcoming areas for the faculty and staff of Polytechnics and Engineering colleges. The Department also offers Master of Engineering (Regular & Modular) in Civil Engineering (Construction Technology and Management) for teachers of Polytechnics, Engineering Colleges, Officials of Directorate of Technical Education & Industry Professionals. Further, Department also offers Ph.D. programme. M.E. in Civil Engineering (Construction Technology Management) - Currently running. **The Department is planning to start the following programmes in the span of 15 years.**

- M.E. in Clean Technologies and Sustainable Development
- M.E. in Disaster Management
- PG Diploma in Rehabilitation Engineering

- PG Diploma in Clean Technologies for Sustainable Development
- Ph.D.in newer areas
- Post Doctoral Research

Curriculum Development Centre: Govt. of India, Ministry of Human Resource Development, in 1971 established a Curriculum Development Centre at NITTTR, Chandigarh with a view to keep the curricula offered by the polytechnic in tune with the requirements of World of Work. Since then, Curriculum Development Centre has evolved a scientific methodology of designing/revising the curriculum and has been rendering services to the Directorates/Boards of Technical Education/Universities in the states of Northern Region. National Policy of Education-1986 and Programme of Action (POA) has given considerable importance to make technician programmes relevant to the requirements of the world of work. As a follow up of this, World Bank Assisted Project on strengthening Technician Education in India has laid emphases on capacity expansion by starting new diploma programmes in emerging areas of technology and revising the curricula of existing programmes. Introduction of flexibility in programme offering by way of introducing Multipoint Entry and Credit System (MPECS) is another initiative of World Bank Assisted Project in the area of Curriculum Development. Another aspect of the World Bank Assisted Project has been to develop professional competencies at the state level by way of conducting orientation and development programmes for the official of the Directorate / Board of Technical Education/Universities in the field of Curriculum Development. The centre is planning to start the following programmes in the span of 15 years.

- PG Diploma in Adaptive Curriculum Development
- Post Doctoral Research

Education and Educational Management: Since the inception of the Institute, the Department is actively involved in the conduct of long term and short term teacher training programmes in the areas of educational technology, pedagogy and management for facilitating effective teaching-learning process. In addition, the Department also undertakes activities related to Instructional Material Development, R&D and Extension Services and Consultancy. The Department has a Computer Laboratory which is equipped with computer systems with internet connectivity. The Department is planning to start these programmes in the span of 15 years.

- M.Tech in Engineering Education
- PG Diploma in Teaching in Digital Age
- PG Diploma in Institute Project Planning & Management
- PG Diploma in Institutional Resources Management
- Certificate Course in ICT Enabled Learning
- Ph.D. in newer areas
- Post Doctoral Research

Electrical Engineering: Electrical Engineering Department is one of the major departments, created since the establishment of the institute. The department conducted long term teacher training programmes for polytechnic teachers under the staff development programmes for a number of years and provided training to a large number of teachers in the polytechnics of the northern region. With the institute being raised to the level of national institute the department had been conducting a large number of courses in the various emerging areas for the faculty members of Engineering colleges all over the country. As a result of the various staff development programmes, the trained teachers have gradually elevated to senior positions and have by now taken up higher responsibilities. The institute has been granted the status of being a research Centre for Panjab University, Chandigarh and Punjab Technical University, Jalandhar. Under this scheme 12 research scholars are pursuing their Ph.D. in various areas of Electrical Engineering.

The department also conducts tailor made training programmes for industry and other working professionals in various thrust areas. The department faculty is actively involved in action research. On an average about 10-12 such projects are being undertaken every year. The department is also responsible for planning and maintaining of internal telephones, and electrical installations in the institute buildings and campus. The Department is currently running ME in Electrical Engineering (Instrumentation and Control). The department proposes the following programmes:

- M.E. in Electrical Engineering (Energy and Environmental Management)
- Advanced Diploma in Electric Vehicles
- Ph.D. in newer areas
- Post Doctoral Research

Electronics and Communication Engineering: The department of Electronics & Communication since its establishment progressed steadfastly to its present status of being reckoned as a Leader in Electronics & Communication with the sanctioned faculty strength of One Professor, Two Associate Professors and Three Assistant Professors. The department is actively involved in conducting Post-Graduate Course on Regular & Modular modes Industry Oriented & Practice Based Master of Engineering in Electronics & Communication Engineering for the sponsored teachers of Polytechnics, Engineering Colleges, Officials of Directorate of Technical Education and Industry Professionals at Regional and National Level in the country. The department also offers Ph.D. Program in the area of Electronics & Communication Engineering. The department conducts need-based short-term courses in the emerging areas like Wireless LANs & Computer Networks, Advanced VLSI Design & Digital Signal Processing, Wireless & Mobile Communication, Digital & Data Communication, Embedded & Digital System Design, Artificial Neural Networks & Fuzzy Logic, Optical Fiber Communication and Image Processing etc. to update the knowledge and skill of faculty and technical staff of Polytechnics and Engineering Colleges.

The department is also involved in conducting Induction Training Programs through ICT in the Northern Region.

This Electronics Service Centre was established in 1985 as a nodal agency to cater the needs of repair and maintenance of defective Electronic Equipment, Power Supplies, SMPS, UPS, Test and Measuring Instruments of polytechnic laboratories of the Northern Region. In mid-90's repair and maintenance was started through short term training programs for the faculty and technical staff of the Polytechnics of the Northern Region States. In 2012 this centre has enhanced the role and started conducting short term training programs for the faculty and technical staff of the engineering colleges of the Northern Region States and industrial training for students of engineering colleges and polytechnic on various projects of 2/4/6/8 Weeks and 6 Months durations. ME in Electronics and Communication Engineering-Currently running.

The Department is planning to start below listed programmes in the span of 15 years.

- M.E. in Reconfigurable Electronics
- M.E. in Smart Electronics
- PG Diploma in Rehabilitation Engineering
- PG Diploma in Smart and Flexible Electronics
- Ph.D. in newer areas
- Post Doctoral Research

Entrepreneurship Development & Industrial Coordination (EDIC):

Entrepreneurship Development & Industrial Coordination (EDIC) department was established at NITTTR Chandigarh in the year 1983, with a view to introduce and promote entrepreneurship development and improve industry-institute interaction (III) in technician education system in a planned manner. Subsequently, the scope was enlarged to include engineering colleges as well of the country with focus on northern region. The department is engaged in training of entrepreneurs, potential entrepreneurs, entrepreneur-trainer-motivators (ETMs), technical teachers / managers, administrators and professionals from industries. With a view to have a holistic approach to the promotion of entrepreneurship and industry-institute interaction, the department is also conducting Research & Development studies, preparing instructional material (both print and non-print), offering assistance in curriculum design and extension services to client institutes and undertaking consultancy work in the broad areas of entrepreneurship, cooperative education, industry-institute interaction and Management. The Department is planning to start the below stated programmes in the span of 15 years.

- MBA in Infrastructure Management
- PG Diploma in Academic Management, Leadership and Governance
- PG Diploma in Business Economics for Higher Education Institutions
- Ph.D. in newer areas
- Post Doctoral Research

Mechanical Engineering: The department started functioning in 1967. The institute had the collaboration of the Royal Dutch government. The collaborators offered expertise in Mechanical Engineering in the form of Dutch experts, equipment in different areas of Mechanical Engineering and foreign training to selected faculty. Professor G. J. Tonkes was the Chief Netherlands expert and also the expert for the Mechanical Engineering Department. The Department aims to provide quality technical education to the technical teachers and industry professionals in the form of doctoral & post graduate programmes and short term training programmes. The Department offers postgraduate programs leading to M.E. (Manufacturing Technology) and PhD degree and short-term courses in various advanced areas of mechanical engineering. The thrust areas of department include Manufacturing Technology, Computer Aided Design, Computer Aided Manufacturing, Mechatronics, Automation, Robotics, Refrigeration & Air Conditioning, Metrology and Material Testing. With the Institute becoming a NATIONAL INSTITUTE in 2002, the department has increasingly focused on post graduate education and doctoral research. ME in Mechanical Engineering (Manufacturing Technology)- Currently running. ME in Mechanical Engineering (Robotics) - Currently running

The Department is planning to start the various programmes in the span of 15 years.

- M.E. in Mechanical Engineering (Digital Manufacturing)
- PG Diploma in Additive Manufacturing
- PG Diploma in Material Characterisation
- Advanced Certificate course in robotics
- Ph.D. in newer areas
- Post Doctoral Research

Media Engineering: Media Engineering is a rapidly growing and an evolving area. It is an amalgamation of media technology and media principles. The value addition due to multimedia, and more specifically the e-media has forced the eco-system to think of innovation in media tools, implementation of tools, assessment tools, media quality, transparency and more so in integrating the general masses thereby, giving birth to a department in the institute named as 'Media Engineering'. Digitization, virtualization and cyber physical integration has created a new dimension in media and its related areas. Accordingly, gaming, e-content development, media entertainment, innovative instructional material, LMS, CMS, media communication, media tools, application for tools and educational product development are the prime focused areas of the department. Multimedia presentation and authoring, multimedia data compression and multimedia communication and retrieval, form the three foundational pillars of the department. Social journalism and media research, development of quality MOOCs, production of documentary films, digital design and publishing are now given more cared attention in today's scenario. The department is engineered to create manpower needed for evolving media world. The department conducts various short-term courses on media and media related themes including application tools.

The department is poised to conduct long- term programmes leading to master's degree in many upcoming areas pertaining to media engineering. The Department is planning to start these programmes in the span of 15 years.

- M.E. in Media Development
- MSc/PG Diploma in Digital Media and Social Journalism
- PG Diploma in Media Resource Development
- PG Diploma/Certificate Course in Video Film Making
- Advanced Certificate Course in Animation
- Advanced Diploma in Documentary Video Film Making
- PG Diploma in Eco-journalism
- Ph.D. in newer areas
- Post Doctoral Research

Rural Development Centre: The Department of Rural Development at Technical Teachers' Training Institute, Chandigarh had been established by the Ministry of Human Resource Development, Govt. of India in 1978-79. The department has been given the main responsibility to work as a resource centre for the Scheme of Community Development through Polytechnics in the field of staff development, curriculum design, instructional material development, research and development and extension services. In addition to these activities, the Department of Rural Development has successfully completed various projects at national and international level for UNICEF, MHRD, MRD, NOS, EdCIL, Department of Science & Technology, CAPART, S&T Council, Rajiv Gandhi National Drinking Water Mission, AICTE, etc. Rural Development Department of the institute is also engaged in developing, upgrading and innovating technological products/processes and their dissemination in rural areas through the Polytechnics implementing the Scheme of Community Development through Polytechnics. **The Centre is planning to start these programmes in the span of 15 years.**

- MBA in Rural Entrepreneurship
- PG Diploma in Rural Sustainable Technology
- Ph.D. in newer areas
- Post Doctoral Research

Interdisciplinary Programmes: NITTTR, Chandigarh is planning to start the following inter-disciplinary programmes in the span of 15 years.

- M.E. in Engineering for Natural Medicine
- M.E. in Healthcare Equipment Design
- PG Diploma in Institutional Assessment, Accreditation and Ranking
- M.E. in Machine Learning
- PG Diploma in Smart City Maintenance Engineering
- PG Diploma in Re-engineering of Traditional Technology

5-6 Master's Programme and equal number of Post Graduate Diploma Programmes will be launched every 5 years.

Tentative Schedule for launching the programs:

Following Master's Degree programs have already been approved by AICTE and started in the academic year, 2020-21:

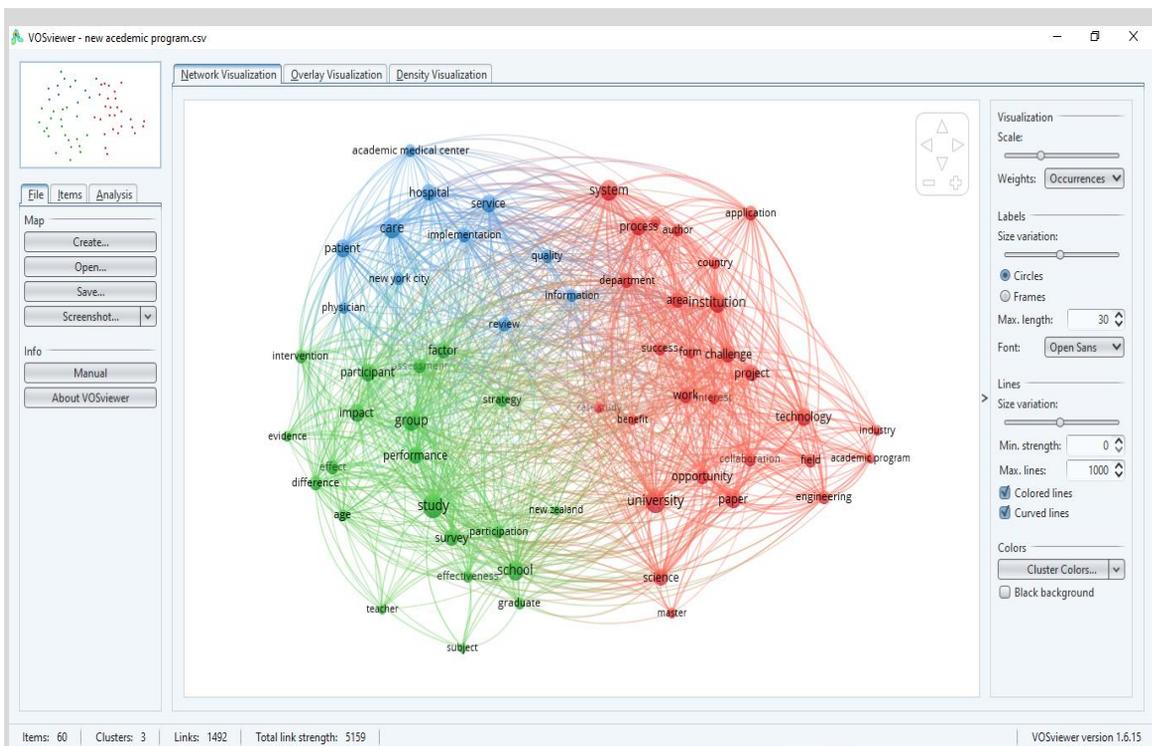
- **Master of Engineering in Mechanical Engineering (Specialization in Robotics)**
- **Master of Engineering in Computer Science and Engineering (Specialization in Internet of Things)**
- **Master of Engineering in Electronics and Communication Engineering (Specialization in Artificial Intelligence)**

MASTERS' DEGREE PROGRAMS BEING OFFERED AT PRESENT

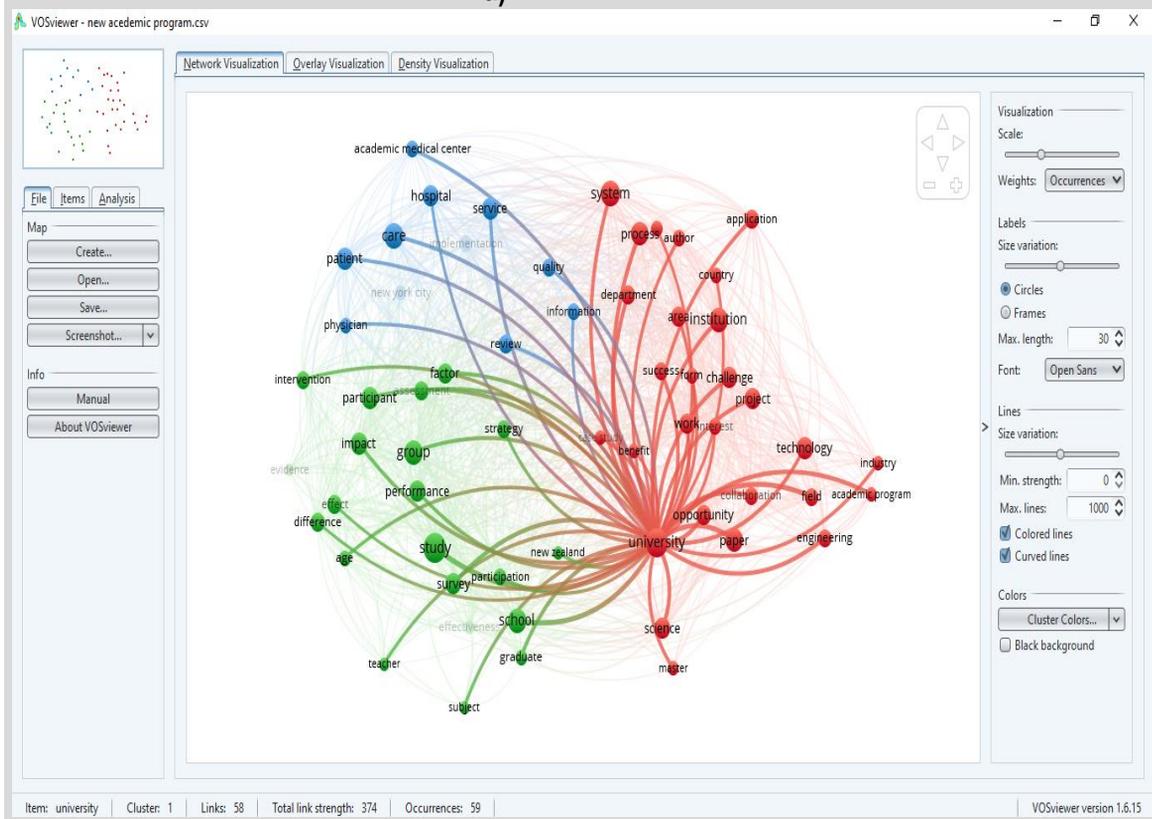
Sr. No.	Programme Name	Coordination Department	Sanctioned Intake	Year of Starting
Masters' Degree Programs- Regular Mode				
1.	Mechanical Engineering (Manufacturing Technology)	Mechanical Engineering	18	1992-1993
2.	Electrical Engineering (Instrumentation and Control)	Electrical Engineering	18	1997-98
3.	Electronics and Communication Engineering	Electronics and Communication Engineering	18	1997-98
4.	Civil Engineering (Construction Technology and Management)	Civil Engineering	25	1994-95
5.	Computer Science and Engineering	Computer Science and Engineering	18	1994-95
6.	Mechanical Engineering (Robotics)	Mechanical Engineering	18	2020-21
7.	Electronics and Communication Engineering (Artificial Intelligence)	Electronics and Communication Engineering	18	2020-21
8.	Computer Science and Engineering (Internet of Things)	Computer Science and Engineering	18	2020-21
Master of Engineering- Modular Mode				
9.	Mechanical Engineering (Manufacturing Technology)	Mechanical Engineering	18	2005-06
10.	Electrical Engineering (Instrumentation and Control)	Electrical Engineering	18	2005-06
11.	Electronics and Communication Engineering	Electronics and Communication Engineering	18	2005-06
12.	Civil Engineering (Construction Technology and Management)	Civil Engineering	35	2005-06
13.	Computer Science and Engineering	Computer Science and Engineering	18	2005-06

Justification of launching of new programmes:

For gap analysis, regarding new academic programmes bibliographic analysis using Scopus data was performed from 1990 to 2020 (Figure 1 [a- b]).



a)



b)

Figure 1: Bibliographic analysis using VOS viewer software for gap analysis of new academic programme (a), Present status of university linkages with different subgroups

As observed from **Figure 1(a) and 1(b)** by keeping University as a Node, number of programmes have been launched by different universities, but the major gap was noticed in terms of effectiveness and implementation strategies. Keeping these in mind as regard to new academic programmes the effectiveness will be maintained with Outcome Based Education Model. Based upon gap analysis following new academic programmes have been proposed as per the schedule:

PROPOSED PROGRAMS

Sr. No.	Programme Name	Coordination Department	No of students to be admitted	Year of Starting
Masters' Degree Programs				
1.	Civil Engineering (Smart Infrastructure)	Civil Engineering	18	2022-23
2.	Physics (Specialization in Nano-photonics)	Applied Science	30	2021-22
3.	Engineering Education	Education and Educational Management	30	2023-24
4.	Electrical Engineering (Smart Grid)	Electrical Engineering	18	2025-26
5.	MBA in Rural Entrepreneurship	EDIC and Rural Development	30	2022-23
6.	Mechanical Engineering (Digital Manufacturing)	Mechanical Engineering	18	2025-26
7.	Clean Technologies and Sustainable Development	Civil Engineering & Rural Development	18	2026-27
8.	Computer Science and Engineering (Cyber Security)	Computer Science and Engineering	18	2022-23
9.	Electrical Engineering (Energy and Environmental Management)	Electrical Engineering	18	2026-27
10.	Digital Media and Social Journalism	Media engineering	30	2023-24
11.	MBA in Infrastructure Management	Entrepreneurship Development and Industrial Coordination	30	2022-23
12.	Engineering for Natural Medicine	Interdisciplinary	30	2028-29
13.	Disaster Management	Civil Engineering	30	2025-26
14.	Healthcare Equipment Design	Interdisciplinary in collaboration with outside agency	30	2028-29

Sr. No.	Programme Name	Coordination Department	No of students to be admitted	Year of Starting
PG Diploma Programs				
15.	Additive Manufacturing	Mechanical Engineering	60	2022-23
16.	Material Characterisation	Mechanical Engineering	60	2023-24
17.	Construction Project Management	Civil Engineering	60	2021-22
18.	Highway Engineering	Civil Engineering	60	2021-22
19.	Networks and Cyber Security	Computer Science and Engineering	60	2021-22
20.	Reconfigurable Electronics	Electronics and Communication Engineering	60	2022-23
21.	Rehabilitation Engineering	Electronics and Communication Engineering	60	2023-24
22.	Smart and Flexible Electronics	Electronics and Communication Engineering	60	2024-25
23.	Media Application for Social and Environmental Journalism	Rural Development Department & Media Engineering	30	2022-23
24.	Adaptive Curriculum Development	Curriculum Development Centre	60	2021-22
25.	Digital Marketing	Computer Science and Engineering & Medial Engineering	60	2022-23
26.	Data Analytics	Computer Science and Engineering	60	2021-22
27.	Emerging Engineering Pedagogy with AR/VR Systems	Computer Science and Engineering & Medial Engineering	60	2022-23
28.	Advanced Cyber Security and Mitigation Techniques	Computer Science and Engineering	60	2025-26
29.	Energy and Sustainability	Rural Development Department	60	2025-26
30.	Clean Technologies for Sustainable Development	Civil Engineering	60	2023-24
31.	Teaching in Digital Age	Education and Educational Management	60	2021-22

Sr. No.	Programme Name	Coordination Department	No of students to be admitted	Year of Starting
PG Diploma Programs				
32.	Institute Project Planning & Management	Education and Educational Management	60	2024-25
33.	Institutional Resources Management	Education and Educational Management	60	2025-26
34.	Digital Media and Social Journalism	Media Engineering	60	2022-23
35.	Pharma Engineering	Interdisciplinary in collaboration with outside agency	60	2028-29
36.	Academic Management, Leadership and Governance	Entrepreneurship Development and Industrial Coordination	60	2025-26
37.	Institutional Assessment, Accreditation and Ranking	Mechanical Engineering	60	2021-22
38.	Business Economics for Higher Education Institutions	Entrepreneurship Development and Industrial Coordination	60	2025-26
39.	Media Resource Development	Media Engineering	60	2022-23
Advanced Diploma/Certificate Programs				
40.	Advanced Diploma in Electric Vehicles	Electrical Engineering	60	2023-25
41.	Advanced Diploma in AI Systems	Electronics and Communication Engineering	60	2021-22
42.	Advanced Diploma in Embedded Systems and IoT	Electronics and Communication Engineering	60	2021-22
43.	Certificate Course in ICT Enabled Learning	Education and Education Management	90	2021-22
44.	Advanced Diploma in Traditional Technology	Interdisciplinary	60	2022-23
45.	Certificate course in video film making	Media Engineering	60	2021-22
46.	Advanced Certificate course in robotics	Mechanical Engineering	60	2022-23
47.	Advanced Certificate course in cloud applications	Computer Science and Engineering	60	2021-22
48.	Advanced Certificate course in animation	Media Engineering	60	2022-23

Sr. No.	Programme Name	Coordination Department	No of students to be admitted	Year of Starting
49.	Advanced Certificate course in gaming	Computer Science and Engineering	60	2024-25
50.	Certificate course in python programming	Computer Science and Engineering	90	2021-22

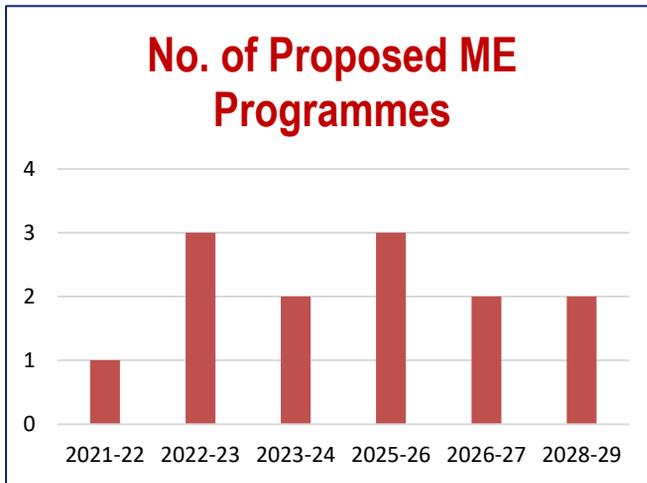


Figure 2: Number of Proposed ME Programmes

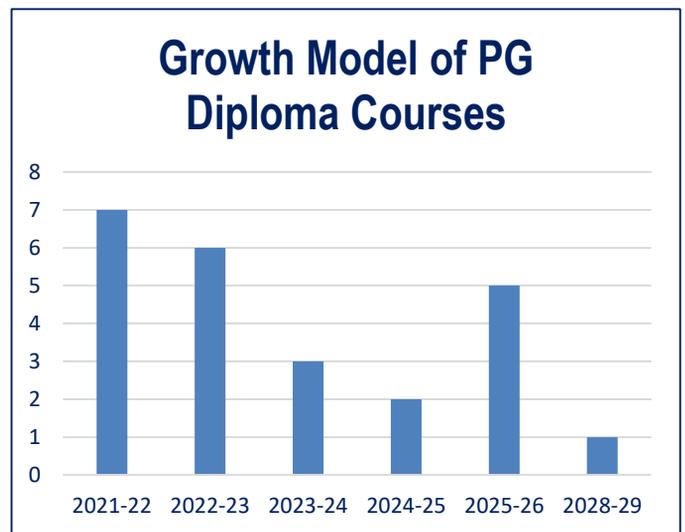


Figure 3: Growth Model of PG Diploma Courses

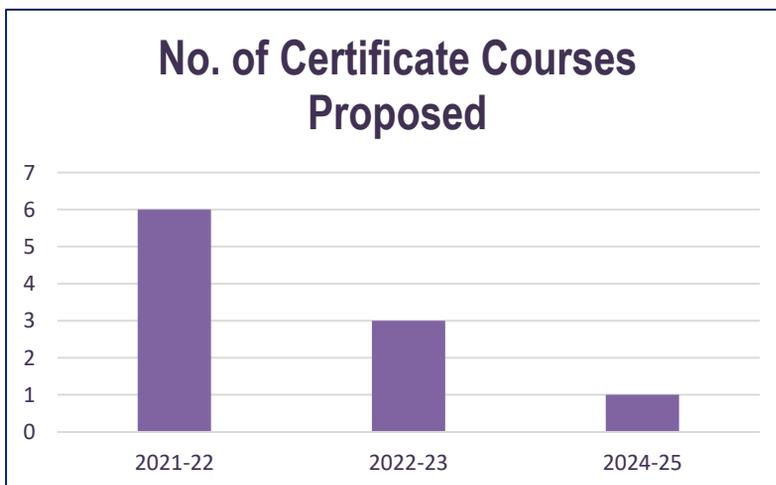
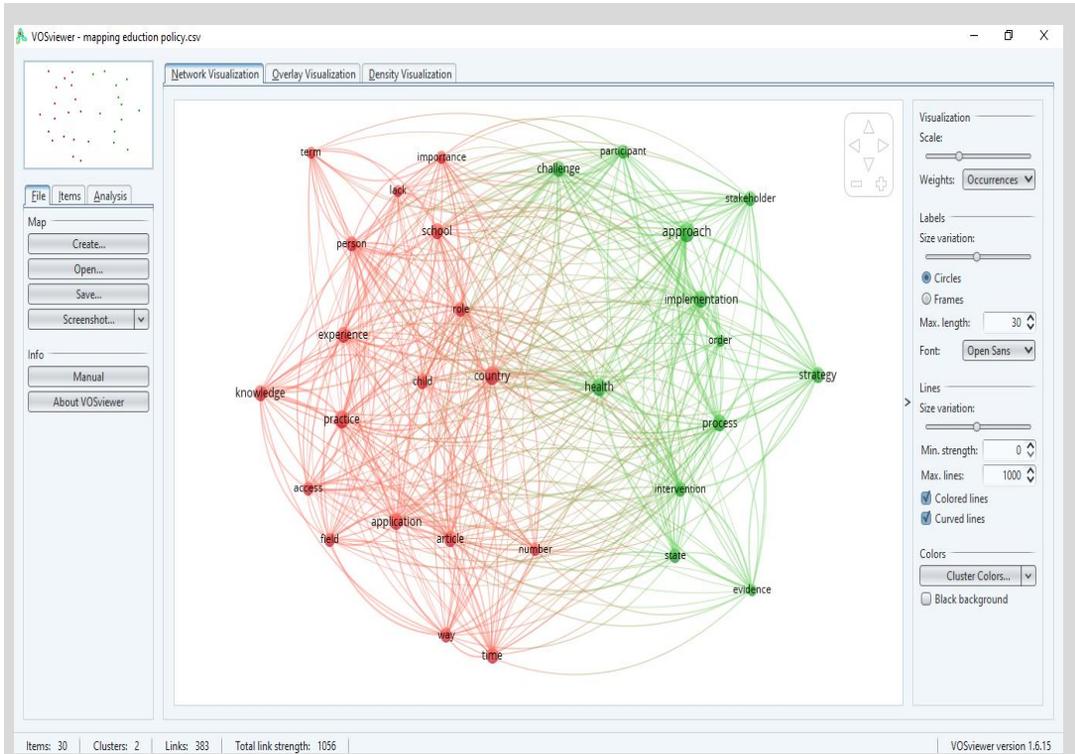


Figure 4: Number of Certificate Courses Proposed

Strengthening and internationalization and launching of hybrid programme from 2030-2035

Mapping with National Mission NEP-2020

For mapping with National mission bibliographic analysis using Scopus data was performed (Figure 5a- b).



a)



b)

Figure 5: Bibliographic analysis using VOS viewer software for gap analysis of national mission (a), Present status of school linkages with different subgroups

Lifelong Learning

For gap analysis under lifelong learning bibliographic analysis using Scopus data was performed (Fig. 6). As observed from Fig. 6 significant studies have been reported in past on lifelong learning.

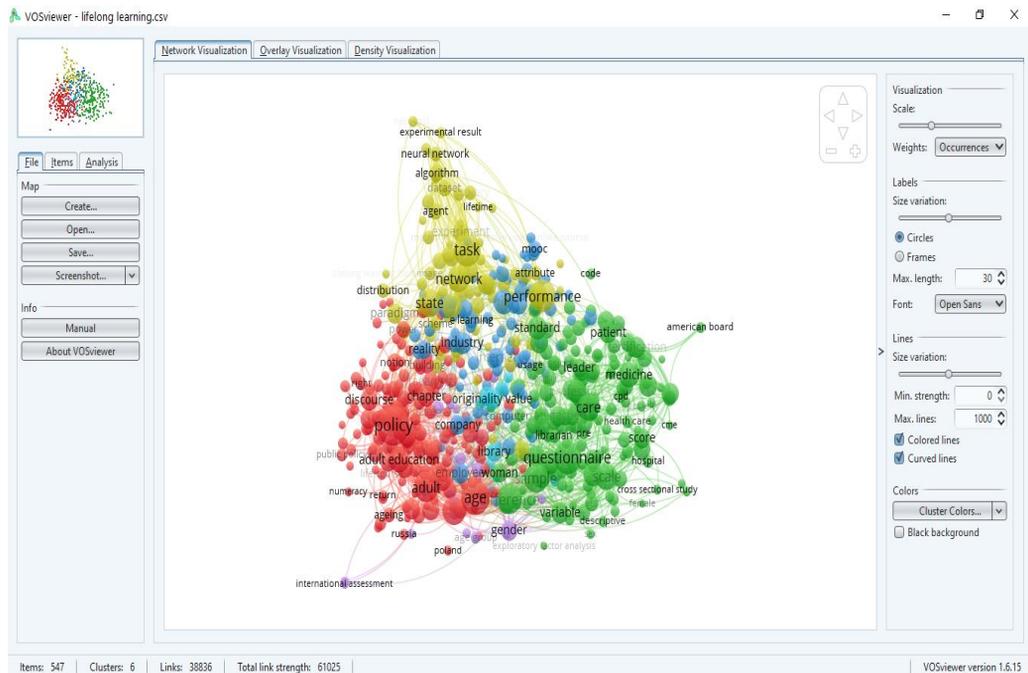
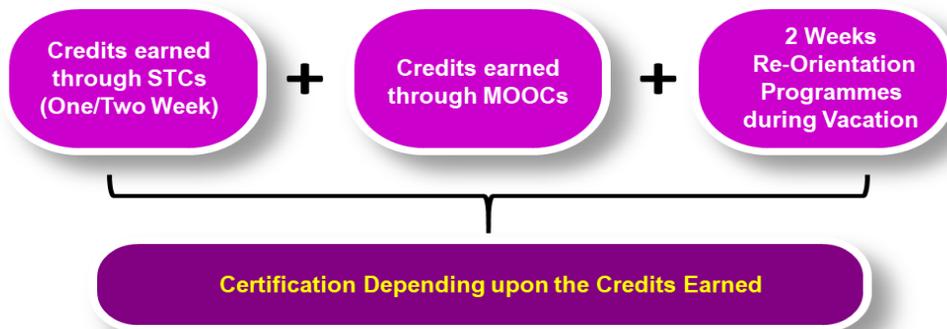


Figure 6: Bibliographic analysis using VOS viewer software for gap analysis of lifelong learning

The lifelong learning will be offered through MOOCs and winter and summer internship of 15 days each at NITTTR Chandigarh, following CBCS based curricula leading to OBE and need based industry driven curricula.

Academic Bank of Credits Leading to Certifications

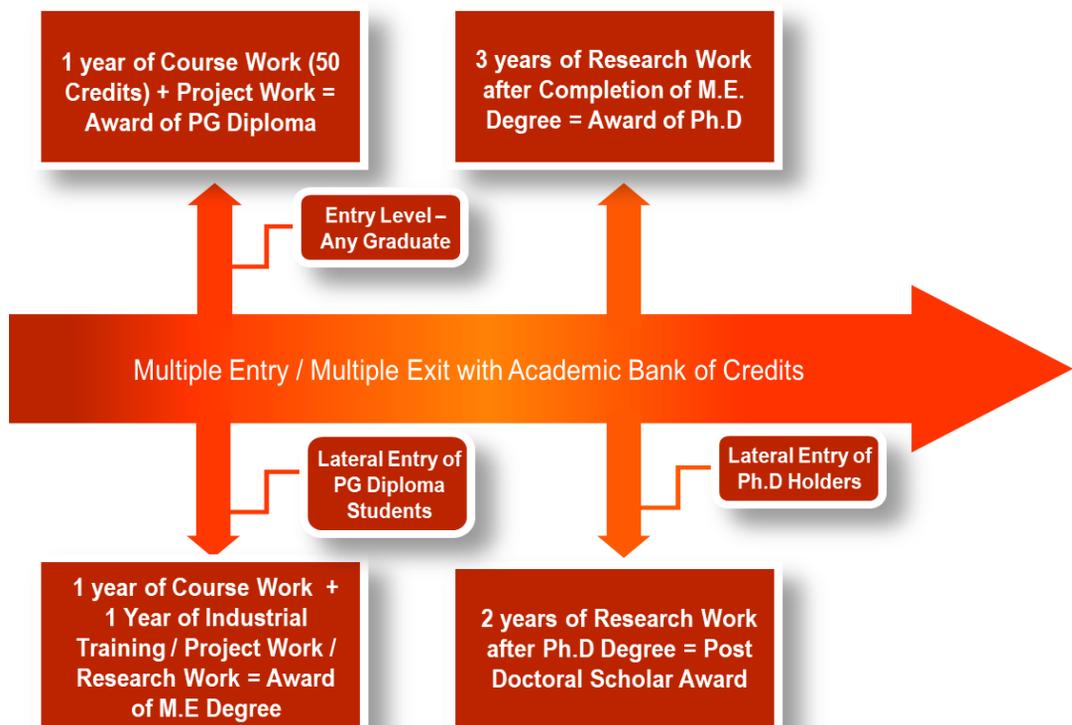


3 Weeks of STCs + 2 modules of MOOC + 1 Weeks Re-Orientation + Project Work = Certificate Course (3+4+1+10 = 18 Credits)

8 Weeks of STCs + 8 modules of MOOC + 2 Weeks Re-Orientation + Project Work = Certificate of Diploma (8+16+2+10 = 36 Credits)

16 Weeks of STCs + 16 modules of MOOC + 2 Weeks Re-Orientation + Project Work = PG Diploma (16+32+2+10 = 60 Credits)

PG Diploma + 1 Year of Course Work = M.E. / M.Tech Degree



The above strategies are in align with NEP 2020 concept of ABC, the academic bank of credits leading to certifications and multiple entry and multiple exit concepts of NEP 2020.

Programmes for Corporate Professionals



- 5 Modules of Blended MOOCs + 2 Weeks Re-Orientation + No. of Years of Service in Relevant Area + Project Work = Certificate Course (18 Credits)
- 10 Modules of Blended MOOCs + 2 Weeks Re-Orientation + No. of Years of Service in Relevant Area + Project Work = Diploma (36 Credits)
- 16 Modules of Blended MOOCs + 2 Weeks Re-Orientation + No. of Years of Service in Relevant Area + Project Work = PG Diploma (60 Credits)
- PG Diploma + 1 year of Course Work (Weekend) = M.E./M.Tech Degree

On similar lines, the programmes will be curated/implemented for corporate professionals considering credits for recognition of prior learning/experience in the domain specific areas. Certificates/Diploma/PG Diploma/M.Tech degrees are conferred to the candidates based on the credits earned in the above pattern.

Certificate Programme in Educational Pedagogy (for in-service technical teachers)



Recognition of Prior Learning



Outputs and Outcomes

Sl. No.	Indicator Description	Remarks/Description
Outputs		
1	Number of New Students Admitted	Should be calculated with baseline data for last three years. The target should be fixed for an Academic Year. The target should be periodically assessed in every quarter. 5 to 10 enhancement shall be rolled out.
2	% of girls in newly enrolled students	
3	Number of International Students admitted	
4	Number of STCs conducted leading to certificate programmes	
5	Number of programmes conducted for corporate professionals	
6	Number of Ph.D. students admitted	
7	Total number of teachers trained	
8.	No. of Resource Material/Products developed	
9.	No. of Patents filed	
10.	No. of In-house Training conducted	
11.	No. of MOUs with Industries and International Organization	
Outcomes		
1	Number of students graduated	Should be calculated with baseline data for last three years. The target should be fixed for an Academic Year. The target should be periodically assessed in every quarter.
2	Average CGPA% percentage of the graduating students	
3	Number of students who received campus placement offers	
4	Number of research papers published by the students	
5	Number of teachers who have enrolled for Certificate Programmes by attending STCs	
6	Faculty student ratio maintained	
7	Revenue cost per student per annum (Rs in Lakh)	
8	Total revenue generated from students including fee (Rs. in Lakh)	
9.	IPR transferred (Technology)	
10.	No. of PhD and Post-Docs.	

Output / Outcomes for next 15 Years:

Sl. No.	Indicator Description	Projection for next 5 Years	Projection for next 10 Years	Projection for next 15 Years
Outputs				
1	Number of New Students to be admitted	800	1500	2000
2	% of girls in newly enrolled students	20%	30%	40%
3	Number of International Students	5%	15%	30%
4	Number of STCs to be conducted leading to certificate programmes	100	200	300
5	Number of programmes to be conducted for corporate professionals	25	100	200
6	Number of Ph.D. students	150	300	500
7	Total number of teachers to be trained	50000	100,000	150,000
8	No. of students admitted for Online Courses	200	500	1000
9	No. of Fellowship & Scholarship based admissions	50	70	100
10	No. Admissions based on GATE/Other National Tests	80	130	200
11	No. Admissions based on Institute level tests	100	200	300
Outcomes				
1	Number of students graduated (As a Percentage of Students Admitted)	100%	100%	100%
2	Average CGPA/% percentage of the graduating students	7.5	8.0	>8.0
3	Number of students who received campus placement offers (As a Percentage of Students who are graduated)	50%	70%	>70%
4	Number of research papers published by the students (As a Percentage of Students who are graduated)	50%	70%	>80%
5	Number of teachers who have enrolled for Certificate Programmes by attending STCs (As a percentage of total number of teachers who are participating in STCs)	30%	50%	>60%
6	Faculty student ratio maintained	1:12	1:10	1:10
7	NIRF Ranking	Within 100	Within 50	Within 25
8	Accreditation (as % of programmes offered)	60%	90%	100%

SWOC

- More than 80% of the faculty are PhD holders with average experience of 10+ Years
- Well-developed infrastructure with state of the art laboratories
- Expertise in offering Inter disciplinary programs viz PG and PhD Programmes, Pedagogy embodied programs with hybrid mode of teaching
- Network with technical institutions at National Level
- Strategically located and well connected
- Fully funded autonomous Institute of Ministry of Education, Govt. of India

Strength

- Being affiliated institute, has to follow rigid processes of affiliating University
- Non-filling of non-teaching vacant posts

Weakness

Opportunity

- NEP-2020 advocating for multi-disciplinary, multi-entry multi-exit, academic bank of credits, networking. International collaboration/Exchange of faculty and students and better autonomy.

Concern

- Establishment of campuses by International Universities may pose a greater challenge
- Fast obsolescence of engineering programs with technical developments needing additional investment

Institute has a specialized centre for Design of Curriculum for programmes at different levels (certificate, diploma, degree and postgraduate degree). Department has developed systematic approach for designing of curriculum using relevant models for the same. Some of the objectives of the department are as follows:

- Design curriculum based on need analysis for development of appropriate competency in target groups.
- Develop CBCS based curriculum for enhancing the scope and accessibility of varied stakeholders from academics & industry.
- Implement Outcome Based Education (OBE) approach with appropriate curriculum design.
- Offer expert services in curriculum design & review for NSQF alignment & CBCS
- Enhance number of PG programs in new & emerging areas of technology and industrial practices, by designing relevant curriculum.
- Introduce socio-digital pedagogy in teaching learning.

Curriculum for the three Master's Degree programs in Robotics, IOT and Artificial Intelligence has already been developed and approved. The draft curriculum for the programs proposed to be launched has been developed. However, the curriculum for all the proposed programs will be put-up to the respective Boards of Studies for approval.

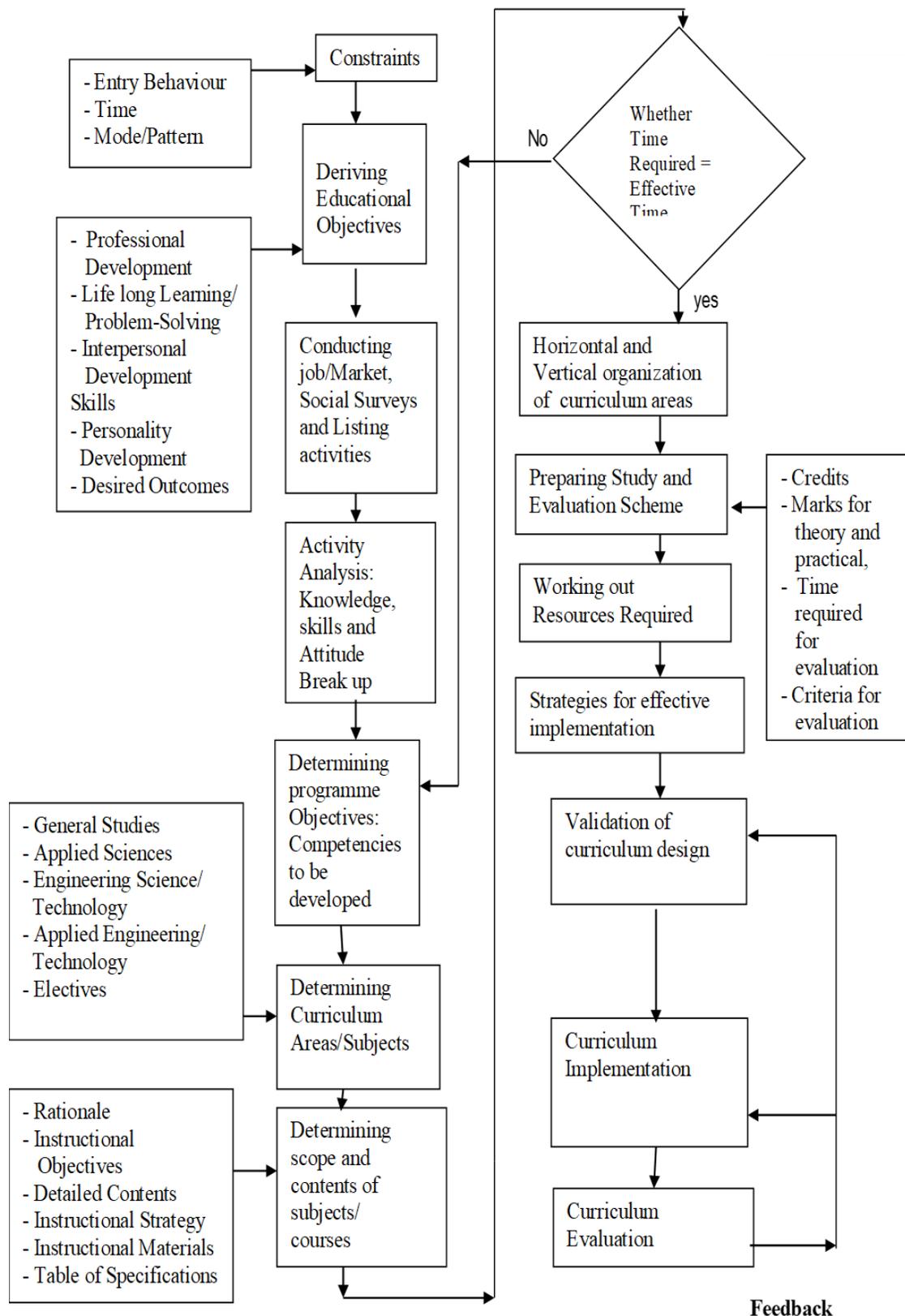


Figure 7: Curriculum Development Model

The curriculum for already approved programs and proposed programs is given in **Annexure-II(a)**.

Student Admission Plan

Student admission policy mentioning plan to select Indian and Foreign Students

NITTTR Chandigarh at present offers programs in the Engineering and Technology, Management and Educational Management and Technology area. On getting the deemed to be University status, the Institute proposes to start interdisciplinary programs in addition to core Engineering and Technology based programs. To achieve effective teaching learning process the intake to the Master's degree Programs will be limited to initially 18 per specialization, in PG Diploma and certificate programs the intake will be limited to 40 per batch. Admission to Ph.D. programs will be limited to the expertise available with the Institute with number of candidates limited as per UGC guidelines. Admission to all the programs will be open to candidates from anywhere in India with reservation as per Government of India rules. The admission will be done on a pre decided admission process which will be informed in advance to the aspiring candidates. It is planned to gradually increase the number of students starting with around 200 students in the initial phase. Institute has developed expertise in offering online programs and plans to start online programs to enable the students to learn at their own pace. Institute plans to admit foreign students as per Ministry guidelines.

Current Admission Policy of NITTTR, Chandigarh

Institute is affiliated to Panjab University Chandigarh for the Master of Engineering and Ph.D. programs being offered by it. Institute follows Panjab University Chandigarh guidelines and framework for admission to these programs and complies with the reservation guidelines of Government of India. The new programmes started in 2020-21 are being offered in affiliation with JC Bose University of Science and Technology, Faridabad.

Rationale for Introduction of Master of Engineering Programmes:

To keep pace with rapid advancement in technology, the country requires high quality manpower with technical and managerial capabilities in 21st century. There are primarily three distinct categories of technical manpower needed by the industry in the country, i.e., engineers, technicians and skilled workers. Personnel of each of these categories play an equally important role in the day-to-day running as well as the development and growth of industry. The institutions which are producing technical manpower, therefore, need teachers who have the required knowledge and skills to train good technicians and engineers. Thus, there is a great need to reorient and upgrade the knowledge and skills of existing teachers of technical institutions through Industry oriented and Practice based Programmes in Engineering and Technology at Master's Degree level. These programmes will help develop the professional capabilities desired by teachers for training technicians/engineers that would meet the changing requirements of industry. Apart from teaching, there are some very significant aspects of technical education management and training towards which the people are working in the technical education system. To meet the training requirements of such personnel engaged in the planning and management of technical education, curriculum development, instructional material development, rural and community development, entrepreneurship development, industry-institute interaction etc. at various levels, there is an urgent need that a Master's degree programme in Engineering Education which provides different specializations matching the emerging requirements be instituted. In view of the foregoing, the institute started offering the following programmes:

Master of Engineering Programmes in Emerging Areas Starting from the academic session 2020-21 (Regular – Programmes in Emerging Areas)

Recognizing the need to provide professionally trained post graduate engineers in the upcoming areas like Computer Science and Engineering(Internet of Things), Electronics and Communication Engineering (Artificial Intelligence) and Mechanical Engineering (Robotics), NITTTR Chandigarh started Master of Engineering Programmes with specializations from this current academic year 2020-21. These programmes are approved by AICTE.

Master of Engineering Programmes (Regular)

Recognizing the need to provide professionally trained teachers and administrators for the technical education system as also to offer professional development opportunities to working technical and training personnel in the industry, NITTTR Chandigarh started offering Master of Engineering Programmes since 1992. These programmes, being offered in five disciplines.

The admission priority is as follows:

- (i) Faculty of Technical Institutions
- (ii) Industry Professionals, and (iii) Fresh Graduates

Master of Engineering Programmes (Modular)

Towards facilitating qualification enhancement of teachers in technical institutes who hold a Bachelor's degree in their respective disciplines, the institute designed and developed a new path breaking system and with approval of All India Council for Technical Education, New Delhi. The institute started offering these programmes in five disciplines namely (i) ME in Mechanical Engineering (Manufacturing Technology) (ii) ME in Civil Engineering (Construction Technology and Management) (iii) ME Computer Science & Engineering (iv) ME Electrical Engineering (Instrumentation & Control) (v) ME Electronics & Communication Engineering w.e.f. June, 2005, thus creating a new era in technical education in the country.

Master of Engineering (Specialization Programmes, Regular and Modular) Programmes – Sanctioned Intake and Reservation

Master of Engineering in Emerging Areas- (Regular Programmes) Starting from the Academic Session 2020-21:- Sanctioned Intake

Total number of seats in each of the ME Regular Programmes (with Specializations) is given below:

S. No	Branch of Master of Engineering (with Specializations)	Sanctioned Intake
1.	M.E. in Computer Science and Engineering (Specialization in Internet of Things)	18
2.	M.E. in Electronics and Communication Engineering (Specialization in Artificial Intelligence)	18
3.	M.E. in Mechanical Engineering (Specialization in Robotics)	18

Master of Engineering Regular Programmes – Sanctioned Intake

Total number of seats in each of the ME Regular Programmes is given below:

S.No.	Branch of Master of Engineering (Regular) Programme	Sanctioned Intake including EWS	Distribution of seats		
			Sponsored Poly. /Engg. College Regular teachers, officials of DTEs/BTEs	Sponsored working professionals from industry/other organizations including universities	Fresh engineering graduate candidates
i	ME in Mechanical Engineering (Manufacturing Technology)	23	12	04	07
ii	ME in Civil Engineering (Construction Technology & Management)	35	21	04	10
iii	ME in Computer Science & Engineering	23	12	04	07
iv	ME in Electrical Engineering (Instrumentation and Control)	23	12	04	07
v	ME in Electronics & Communication Engineering	23	12	04	07

Fresh Engineering graduates and candidates from industry/ other organizations including universities in these programmes are admitted on the basis of valid GATE score. Vacant seats, if any, under sponsored category candidates in all ME (Regular) programmes are filled up from amongst corresponding eligible fresh engineering graduates (with valid GATE score or through CET of PU, Chandigarh). Due credit is given to GATE qualified fresh engineering candidates for these ME Regular programmes and the GATE qualified candidates are eligible for scholarship as per AICTE guidelines.

ME Modular Programmes

Total number of seats in each of the ME (Modular) Programmes is as below:

S.No.	Branch of Master of Engineering (Modular) Programme	Number of seats
		Modular
i.	ME in Mechanical Engineering (Manufacturing Technology)	23
ii.	ME in Civil Engineering (Construction Technology & Management)	45
iii.	ME in Computer Science & Engineering	23
iv.	ME in Electrical Engineering (Instrumentation and Control)	23
v.	ME in Electronics & Communication Engineering	23

Total number of seats in each of the five ME (Modular) programmes at Sr. Nos. (i) to (v) above are 23 except in case of Civil Engineering, for sponsored Polytechnic/Engineering College Regular teachers, officials of Directorates, Boards of Technical Education, Universities and official/staff of NITTTRs. However, sponsored candidates from industry & other organizations may also apply in these ME (Modular) programmes. Vacant seats, if any, under sponsored teacher category candidates in all ME (Modular) programmes are filled from corresponding eligible sponsored candidates from industry and other organizations.

RESERVATION

15% seats are reserved for SC candidates, 7.5% seats for ST candidates, 3% for disabled candidates, 27% seats for OBC candidates and 10% for EWS under general category as per instructions of Govt. of India applicable to Central Educational institutions. The institute reserves the right of admission entirely and the decision of NITTTR authorities on admission will be final in all the cases. The institute reserves the right to make any amendment in the prospectus as and when it is deemed necessary.

Admission under QIP (Poly) scheme only for M.E. Regular Programmes

- This institute is one of the ten centers in the country to run QIP (Poly) Scheme of AICTE, New Delhi. Since October, 2007, the institute has been coordinating the admission of M.E. and Ph.D. Programmes in all ten QIP (Poly) Centres as **Principal Coordinator**.
- Only permanent faculty members of AICTE recognized polytechnics can apply for admission.

Research Programs: Research programs leading to Ph.D are available in the following departments.

- Civil Engineering
- Mechanical Engineering
- Electrical & Electronics Engineering
- Electronics & Communication Engineering
- Computer Science & Engineering

Eligibility : Working professionals, faculty and others with a postgraduate qualification in the related discipline and in exceptional cases, Professionals with B.E. and M.E./M.Tech with GATE/PUCET are eligible to apply for Ph.D.

Admission to PhD Programmes under QIP(Poly) and QIP(Engineering) Schemes of AICTE

- This institute is one of the few centers in the country to run QIP (Poly) and QIP (Engineering) Schemes of AICTE, New Delhi. Since October, 2007, the institute has been coordinating the admission of M.E. and Ph.D. Programmes in all ten QIP (Poly) Centres as Principal Coordinator. From 2021, the institute has been approved as a QIP (Ph.D.) Centre for Engineering Colleges.
- Only permanent faculty members of AICTE recognized polytechnics and engineering colleges can apply for admission.

Future Admission Policy of NITTTR, Chandigarh

01

Admission Plan for Indian Students

- The NITTTR, Chandigarh minimum admission requirements are as per Govt. of India norms for Indian Students. Further, NITTTR, Chandigarh student admission policy to follow national policy (e.g. GATE / UGC-NET / Any other National Level Tests). Admission to all the programs is subject to the conditions given below: The candidate should have obtained a minimum of aggregate 60% marks. Admissions will be made purely on merit. The merit position of the candidate for admission will be based on the norms prescribed by the academic council of NITTTR, Chandigarh. However, their eligibility for admission is subject to fulfilling the requirement of minimum marks as per national policies.

Admission Criteria for PG-Diploma Programmes

- Candidates who have completed bachelor's degree in an equivalent discipline with 50% of marks from a recognized university are eligible for PG Diploma programmes.

Master Degree-Parallel

- With emphasis on advanced pedagogical aspects: For students pursuing Masters' Degree Programme from Institutes of National Importance like IITs, NITs, etc., an extended one year programme either in contact mode or in blended mode. The admission criteria is as per the GATE Score / as per the criteria approved by the institute.

Master Degree-Bridge

- With emphasis on advanced pedagogical aspects: For students pursuing Masters' Degree Programme from institutes/Universities other than Institutes of National Importance: The admission criteria is as per the GATE Score and/or the Entrance Examination conducted for this purpose by the Institute.

Masters' Degree Programmes for Corporate Professionals

- The admission criteria is based on the years of experience and their final year degree marks obtained as of evaluation of relevance and as approved by the institute.

Certificate Programmes in Educational Pedagogy

- It is only for in-service teachers. The admission shall be based on the approved norms of the institute.

- The admission shall be based on the approved norms of the institute.

02

Future Admission Policy for Admitting Foreign nationals

- Based on India's vision, the institute alliances with globally ranked Institutes. We provide the vertical facility admission for sponsored and also accommodate for self-financing inbound overseas students, effectively, meeting the individual needs of inbound students wanting to study in India
- For the First year, the vertical focuses on high potential target markets covering mostly SAARC, Middle East and African nations. We firmly believe that an exclusive "Study in India" campaign would act as a catalyst for overseas education in India in the following ways:-
 - Act as a "One Stop Shop" for international students in providing information on the vast choices of quality education available in India at competitive prices
 - To showcase strengths in higher education covering various disciplines viz. Engineering
- The minimum requirements for admission are established by the Academic Council of NITTTR, Chandigarh. However, admission is a competitive process and individual programs may have additional requirements beyond the minimum requirement which will be communicated through Institute website.

For the first five to ten years, the focus will be on Inter disciplinary post graduate programs on high potential target markets covering mostly SAARC, Middle East and African nations.

First Ten to Fifteen years, the focus will be on Inter-Disciplinary Post Graduate/Research Programs on high potential target markets covering mostly SAARC, Middle East and African nations, Europe countries.

Admission Criteria for Postgraduate Programmes

- Foreign Nationals can seek admission to various Post - graduate programmes with Qualifying Degree as per qualification criteria of NITTTR, Chandigarh.

Master of Technology

Minimum Educational Qualifications Eligibility

1.	For students who got degree from India:- Bachelor's degree in Engineering /Technology with valid GATE score or a Master's degree in appropriate Sciences/ Management/Humanities and Social Sciences where eligible with a good academic record and a valid GATE score or qualified in NET (CSIR/UGC)/ NBHM/ CAT/AIMA or equivalent with GRE/GMAT/TOEFL, letters of reference and work experience as the case may be or the other norms of NITTTR, Chandigarh.
2.	Foreign Nationals with foreign degree must meet the minimum educational requirements, i.e. Bachelor's degree in Engineering/Technology with GATE/CAT/XAT/MAT/ATM/UGC or CSIR/NET/JRF or equivalent with GRE/GMAT/TOEFL exam for Working knowledge in English. Application can be downloaded from the Institute website and submit their application to the academic cell either directly or by the other norms of NITTTR, Chandigarh

Doctor of Philosophy (Research) (2 -5 Yrs)

Minimum Educational Qualifications

3.	Foreign Nationals who got degree from India - Master's degree in Engineering/Technology with a good academic record or a Master's degree by Research in engineering/Technology with a good academic record and a valid GATE score or qualified in NET (CSIR / UGC) /NBHM / CAT / AIMA or equivalent with GRE/GMAT/TOEFL. Master's degree in Sciences with a good academic record and of exceptional merit where eligible, for the relevant Engineering discipline and a valid GATE score or qualified in NET (CSIR / UGC) /NBHM / CAT / AIMA or equivalent with GRE/GMAT/TOEFL or the other norms of NITTTR, Chandigarh.
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Doctor of Philosophy (Research) (2 -5 Yrs)

Minimum Educational Qualifications

4. Foreign Nationals with foreign degree must meet the minimum educational requirements, i.e. Master's degree in Engineering/Technology with a good academic record or a Master's degree by Research in engineering/Technology with a good academic record and a valid GATE score or qualified in NET (CSIR / UGC) /NBHM / CAT / AIMA or equivalent with GRE/GMAT/TOEFL. Master's degree in Sciences with a good academic record and of exceptional merit where eligible, for the relevant Engineering discipline and a valid GATE score or qualified in NET (CSIR / UGC) /NBHM / CAT / AIMA or equivalent with GRE/GMAT/TOEFL. Application can be downloaded from the Institute website and submit their application to the academic cell either directly or by the other norms of NITTTR, Chandigarh

The Admission Policy of the Institute will be in consonance with NEP 2020.

03

Student Exchange Programmes

- Foreign Nationals registered for a degree in a recognized Institute/University who is officially sponsored by that Institute/University to carry out Course work / Research or to avail himself a laboratory or other facilities at NITTTR are visiting students under the MoU or otherwise. Admission of Foreign Nationals under the MoU will be made in accordance with the terms and conditions spelt out in the MoU agreed to between NITTTR, Chandigarh and the Country/ University/Institution concerned, following Govt. of India and institute norms.



04

Casual Studentship

- A Foreign National student who has registered for an Engineering/Technology degree in a recognized Institute / University in India or abroad is eligible for being considered as a casual student at NITTTR, Chandigarh. Such a studentship is granted to carry out research or to avail laboratory or other academic facilities or for attending a formal set of courses and shall be governed by institute norms.

05

Strategies for Implementation

- The following strategies for admission of students in different categories are followed:

Fresh B.E/B.Tech Students

- The students will be admitted through GATE/Equivalent examination. In case of vacant seats, the Institute will conduct an online entrance examination for the aspiring candidates. Whereas, International Students will be admitted through DASA or as per Govt. of India norms.

Working Professionals

- Professionals from academic/industries/other organizations will be permitted for admission. The admission shall be based on as per the norms approved by the institute.

Non-formal

- Candidate with pre-requisite qualification can join the programme. The admission will be based on the approved criteria of the institute.

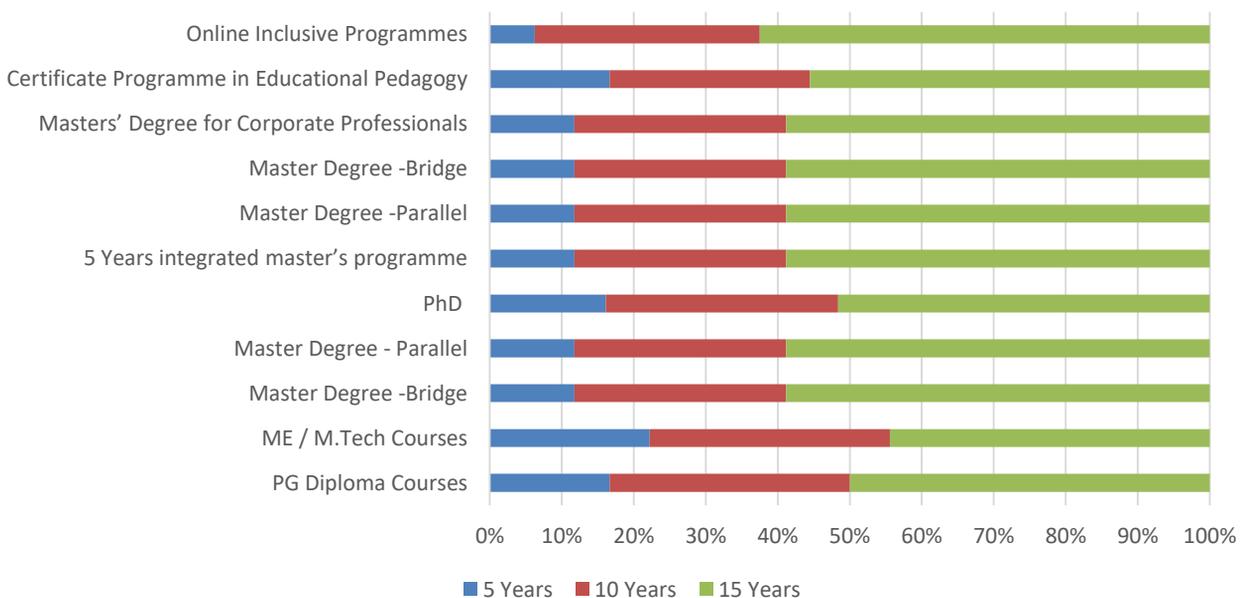
Scholarship to Meritorious Students

The institute will facilitate admission to students having scholarship/fellowship from National/International/External agencies. Institute also would like to explore the possibilities of launching scholarship/fellowship to facilitate meritorious students to join the institute.

06

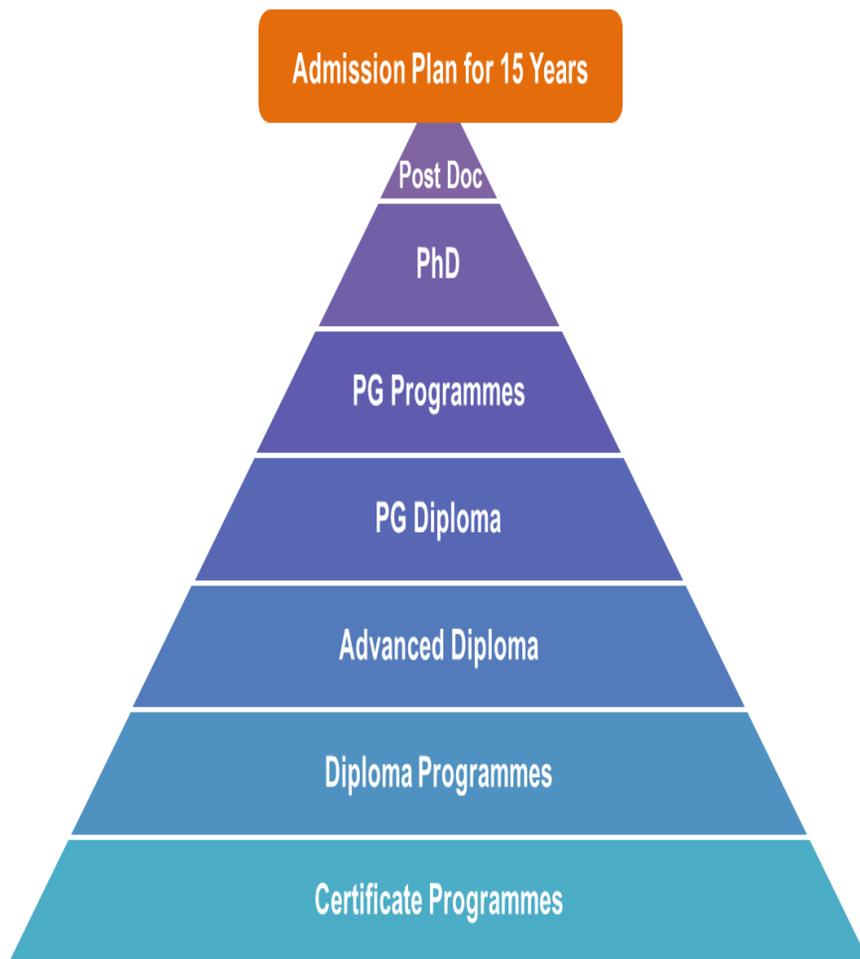
Growth Model

Growth Model



Admission Plan for Next Five Years

	Admission – Intake Existing	Proposed Intake 2021-23	Proposed Intake 2023-25
M.E. Programmes	151	379	529
PG Diploma	-	330	720
PhD	65	125	200



Admission Plan	
5-10 Years	1800 students
10-15 Years	2000 students

Sl. No.	Indicator Description	Remarks /Description
Outputs		
1	Number of New Students Admitted	Should be calculated with baseline data for last three years. The target should be fixed for an Academic Year. The target should be periodically assessed in every quarter.
2	% of girls in newly enrolled students	
3	Number of International Students admitted	
4	Number of STCs conducted leading to certificate programmes	
5	Number of programmes conducted for corporate professionals	
6	Number of Ph.D. students admitted	
7	Total number of teachers trained	
8	No. of students admitted for Online Courses	
9	No. of Fellowship & Scholarship based admissions	
10	No. Admissions based on GATE/Other National Tests	
11	No. Admissions based on Institute level tests	
Outcomes		
1	Revenue cost per student per annum	Should be calculated with baseline data for last three years. The target should be fixed for an Academic Year. The target should be periodically assessed in every quarter.
2	Total revenue generated from students including fee	
3	Number of students graduated (As a Percentage of Students Admitted)	
4	Average CGPA/% percentage of the graduating students	
5	Number of students who received campus placement offers (As a Percentage of Students who are graduated)	
6	Number of research papers published by the students (As a Percentage of Students who are graduated)	
7	Number of teachers who have enrolled for Certificate Programmes by attending STCs (As a percentage of total number of teachers who are participating in STCs)	
8	Faculty student ratio maintained	
9	NIRF Ranking	
10	Accreditation (as % of programmes offered)	

Research Plan

Research, innovation, and extension activities are important pillars in the functioning of NITTTR. The research at NITTTR encapsulates technical research in core and upcoming technologies, blending education technology and pedagogy for enhanced learning experience, research in curriculum design and implementation, rural technologies, media, and ICT based educational delivery products.

NITTTR Chandigarh, on being declared Deemed to be University, plans to further enhance the research and development activity in the new and upcoming areas. Institute plans to augment research programs in the interdisciplinary areas in Engineering and Technology, sciences, and educational technology and management. A special focus will be given to collaborative research with industry, and reputed international and national universities and research organizations. In addition, research projects in the systemic research in technical education will be started with a view to improve the quality and efficiency of the technical education system.

Keeping in mind Government of India initiatives of Make in India, and Atamirbhar Bharat, innovative research leading to patents, product ideas, and technologies to make India self-sustaining shall be given special focus. Institute has taken initiative by forming task forces in Atamirbhar Bharat, and R&D, Consultancy and Patenting. Incubation facilities and expert facilitation to promising researchers and product developers shall be provided. The R&D activities of the institute shall be mainly focused on live fundamental and applied problems in technology and education.

Research Plan

The Institute is constantly working to develop the laboratory facilities for R&D activities. Every year, current and future needs in emerging research areas are assessed through departmental faculty meetings and communicated to the authorities for the upgradation and development of R&D facilities. The requirements of all departments are discussed, and the budget is allocated accordingly. Besides this, faculty is encouraged to submit research proposals to various research funding agencies and industry to enhance research and development in focus areas. This activity shall get a push with the conferment of Deemed to be university status and lead to more meaningful research.

The institute has significant number of collaborations with various institutes and universities of repute. Possible collaboration with more industries and research institutions is being explored and shall be enhanced considerably under the 15-year perspective plan. Besides the already functioning QIP Centre for polytechnics, NITTTR has been accepted as a Centre for QIP scheme for Engineering colleges from this year onwards. This shall give a fillip to NITTTR's research output as well as it's mission of training and capacity enhancement of technical teacher's.

The institute provides support to students and faculty members to present their research work at international and national conferences, and also organizes conferences with a strong research focus. It encourages collaborative research within various departments in the Institute and formation of multidisciplinary Centre's devoted to specific themes. These activities shall be considerably increased in the future.

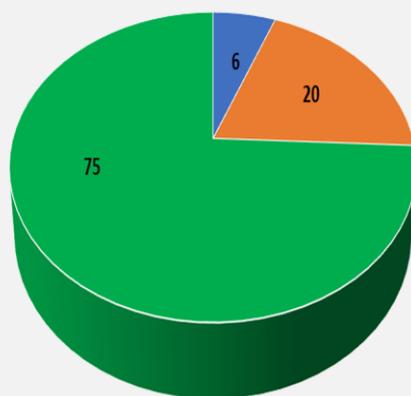
NITTTR Chandigarh after being declared Deemed to be University shall endeavor to achieve the following objectives:

1. Enhancing quality and quantity of publications

The 15-year perspective plan shall focus on significant enhancement of quality publications as an outcome of the research initiatives. This shall be done by taking the following initiatives.

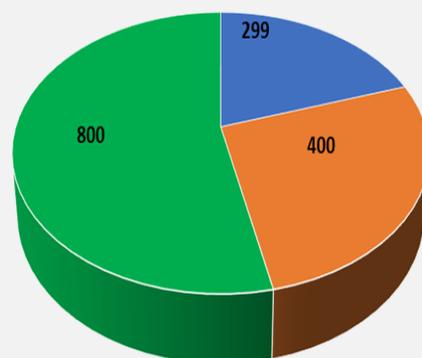
- Motivate faculty and students to publish more and more research papers in journals (SCI/SCIE/SSCI/A&HCI/Scopus) where peers in the top 100 universities of the country publish.
- Admit Post Doctorate Fellows.
- Admit 50 number of Ph.D. students (under QIP, National Fellowship, Industry Fellowship, Exchange Students, Self-Sponsored) per year by offering them stipend for high-end research.
- Secure funding for research and infrastructure development.
- Promote collaborative research at national and international level.

Number of Sponsored R&D Projects



■ Last 5 Years ■ Next 5-8 years ■ Next 8-15 years

Number of Publications in SCI/SCIE/SSCI/A&HCI indexed journals

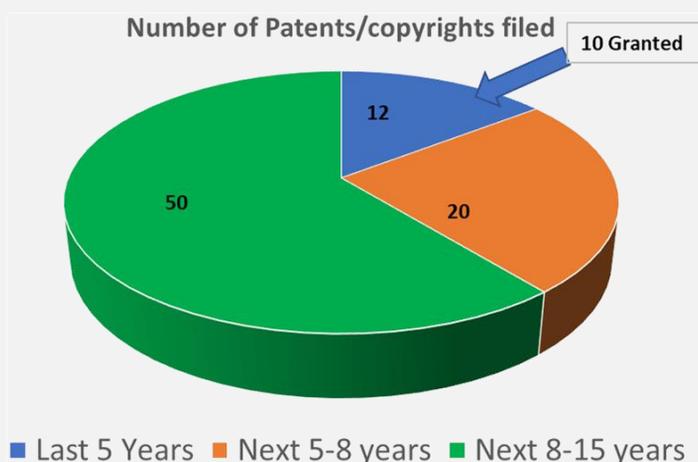


■ Last 5 Years ■ Next 5-8 years ■ Next 8-15 years

2. Patent

The EDIC Department shall coordinate the initiative to promote filing of patents by guiding the innovators, hand holding them in completion of paperwork and networking with different agencies related to patent case preparation and filing. Some of the activities proposed include but not limited to the following.

- ❑ To ensure identification, protection, and commercialization of innovations arising out of research work carried out in the Institute.
- ❑ To sensitize faculty members and students about various patent related issues by conducting workshops / seminars.
- ❑ To establish IPR cell in collaboration with PSCST.



3. Technology Transfer

NITTTR shall endeavor to conduct and promote R & D activities in socially relevant areas like low cost rural technologies, pollution and sustainable development, education management through digital and ICT technologies etc. The aim shall be to provide low cost technology replacement to high cost imports. The technology transfer shall result in creation of an ecosystem of achievement and accomplishment of national mission. With this end in mind the Institute shall carry out the activities mentioned below.

- ❑ To identify and promote R&D activities in emerging areas of science, technology, engineering, and management for current societal, educational, and industrial needs.
- ❑ Identify relevant industries as per the planned and ongoing research projects for technology transfer.
- ❑ Ensure easy access to industry for collaborative research
- ❑ Involvement of industries for sensitizing them about the patents, trademarks of a product design.

4. Industry Sponsored Research

To bridge the gap between industry and academia, initiatives for industry sponsored research are already being taken wherein our teachers and students are being encouraged to take up projects relevant to the industry. These initiatives shall be promoted in a big way so that capacity and confidence is built in the faculty to take up time bound projects from industry with financial commitment. The planned initiatives are summarized below.

- ❑ To identify and promote industry related R&D activities in emerging areas of science, technology, engineering, and management.
 - ❑ To secure funded R&D projects from industries and focus on the oriented research
 - ❑ Involvement of industry for sensitizing faculty members about actual industrial needs and collaborative opportunities.
-

5. Education Policy and Product research

Innumerable challenges are staring in the eye of our nation and it needs a new vision and mindset towards product research useful for societal benefit to tide over these barriers. One of the most important features of the new NEP (National Education Policy) 2020 is its focus on widening the gamut, structure, and quality of research in various fields. The new policy proposes to establish 'New Research Foundation' to lay emphasis on catalyzing and energizing research and innovation across the country in all academic disciplines. NITTTR plans to help in nation building by not only soliciting and delivering projects under this policy but also in offering its services to educational institutions to help them implement the features of the NEP in an effective manner. Design and development of innovative pedagogical and instructional delivery mechanisms will be a focus area.

6. Self-reliance Technology Developmental Research

India's planning for self-reliance in S&T has continuously sought to reduce the country's dependence on imported S&T resources. The achievement of India in the sphere of S&T capability-building, though commendable, is still short of expectations and potential. The efforts to this end require innovation and development of products and processes locally. Although considerable progress towards the achievement of S&T self-reliance has been made, still there are many gaps to be filled. Technical institute like NITTTR shall strive to achieve the desired objectives by providing skilled and technical manpower for design, engineering, and developing equipment besides taking up innovative development of products within the Institute to attain total self-sufficiency, particularly in industries in which the rate of technological change is not fast.

7. Multiorganization Collaboration

Some of the multiorganization collaborations for research which are in place over the past many years include:

- ❑ NITTTR Chandigarh is in coordination with Panjab University Chandigarh for joint-supervision of the PhD scholars, and collaborative research.
- ❑ NITTTR Chandigarh has been recognized as a 'Research Centre' by Panjab University, Chandigarh (in 2006) as well as by Punjab Technical University, Jalandhar (Punjab) (in 2005) for pursuing research work leading to the degree of Doctor of Philosophy.
- ❑ Recently, Himachal Pradesh University Shimla has recognized NITTTR Chandigarh as a Research Centre.
- ❑ NITTTR Chandigarh Faculty is jointly supervising several PhD scholars from NITs/Universities of repute.
- ❑ NITTTR Chandigarh is an active member of Chandigarh Region Innovation and Knowledge Cluster (CRIKC).
- ❑ MOU with SCL Mohali for use of their facilities for research.
- ❑ MOU with NIT Jalandhar.

Besides the above-mentioned initiatives, NITTTR Chandigarh is in the process to collaborate with national (IITs/NITs/Universities/R&D Labs) and international universities for core as well as interdisciplinary projects.

8. Enhancing externally funded research

One goal embraced by NITTTR for the next 15 years is to aim for increasing research-related revenues, especially government and industry sponsored funding and associated indirect cost recovery. Increased research activity leads both to increased revenue and to higher rankings, in turn leading to more student admissions and increased tuition fee.

- Facilitate the NITTTR faculty members with the call for project proposals from various funding agencies.
 - Encouraging Faculty members to collaborate in writing and submitting the interdisciplinary projects in partnership with IITs/NITs/Eminent Universities/R&D Labs.
 - Encouraging Faculty to go in for joint projects with foreign Universities.
-

9. International Collaboration

International collaboration focused on education, research, joint projects, student, and faculty exchange shall be augmented. Existing mandate with foreign partners shall be strengthened and new partnerships forged as a way forward. Initially, in the first five years, it is proposed that meaningful collaborations with International Institutes/Universities Like AIT and UNESCAP Bangkok, UNEVOC Germany etc. shall be put in place. This shall be increased to 22 over the 15-year period with global partnerships targeted at improved research in technology, sciences, education management, curriculum upgradation and joint student and faculty workgroups.

10. Exchange of Scholars and Postdoctoral research

One of the major activities of NITTTR as deemed university shall include exchange of scholars and faculty with renowned institutions in India and abroad. The major objectives for such exchange are enumerated below.

- Promote joint supervision of PhD students with national and international universities.
 - Enhance interaction with national and international universities to find common areas of interest for research.
 - Write student exchange related projects with national and international universities, and R & D labs.
 - Develop infrastructure to promote postdoctoral research.
-

11. Consultancy & Extension Services

At Present NITTTR Chandigarh is offering vibrant consultancy and extension services to a host of Government and Industrial clients. The faculty of the Institute provides extension services to MoE, AICTE, NBA and other Central Government organizations. The technical Institutions are guided to setup laboratories, Quality Improvement, Preparing for Accreditation etc. Besides this some of the other activities over the last five years include the following.

- Policy Planning and Service to Industry and Community
 - Implementation of Government of India Schemes such as Community Development through Polytechnics and Integrating Persons with Disabilities (PWDs) in the Mainstream of Technical and Vocational Education
-

- Design and Testing Services to Industry in various areas of Civil, Electrical and Electronics Engineering.
- Smart Training Centre for Vocational Training of PWDs with collaboration of Sarthak
- Educational Trust, New Delhi and Tech Mahindra Foundation, Delhi.
- Training the Trainers of Technical School in Nigeria in Electrical Installation and Maintenance Work.
- Development of Materials on Energy Conservation for its incorporation in the ITI and Diploma Engineering Curriculum for the State of Punjab (PEDA).
- Numerous Curriculum revision projects for various states and organizations.
- Training Programme on Developing Soft Skills for Effective Work Environment in AAI.
- Several recruitment projects for different states and departments.
- Training Programme by EMGT Department namely Personal Development, Effective Teaching, Induction Training Programme for Newly Recruited Teachers, and Instructional Delivery.
- Bio-gas plant project by Rural Development Department
- Evaluation of Learning Materials.
- Testing of Materials, Design, Quality Control
- Training Need Analysis (TNA) for teachers.
- Documentary Films by media engineering department.
- Third Party Audit Inspection and Stability of Buildings

The 15-year perspective plan for consultancy and extension services include continuing all the activities listed above. Besides this some other broad initiatives planned include:

- Setup of R&D and testing centre for SME and MSME
- Problem solving for industry.
- Design and develop educational products
- Offer expertise to design/revise CBCS curricula leading to OBE.
- Support Government of India to formulate new educational policies/schemes
- Create an Office for In reach and Outreach with society and industry
- Offer community-based MOOCs programmes in collaboration with industry in the emerging areas like digital marketing, sustainable development technologies etc.

Strategies for Implementation

Research and innovation are essential drivers of a dynamic economy, an informed society, and a vibrant culture. The proposed 15-year perspective research plan shall be implemented through a set of well thought out strategic actions which shall give a boost to research activities in NITTTTR as well as the client Institutions in the region.

NITTTTR after being declared deemed to be university shall strive to develop an ecosystem which promotes advancement of knowledge and the dissemination and application of these advances, and through the development of informed and inquiring minds in an environment imbued with discovery and creativity.

NITTTTR after being declared deemed to be university shall confer research leading degrees and follow the Research and Innovation with and for Society. Institute will enhance the alignment of research and innovation to the values and expectations of society, with a particular implicit feedback from the stakeholders. The course work for various research leading degrees (PhD programmes) will be industry based.

Creation of partnerships or collaborations is a strategy frequently followed to promote institutions learning from one another and pooling expertise and resources. The institute shall promote lone scholars, small, medium, and large research groups, start-up companies and large-scale collaborations with industry or other partners. As already discussed, this aspect shall be an important cornerstone of our research policy.

As the number of research-oriented programs being offered grows, NITTTTR shall focus on adding research-oriented faculty members to existing units and providing mentoring and infrastructure to maximize individual success. Faculty shall be encouraged and incentivised to conduct research within each of our extensive range of disciplines, and across disciplinary boundaries.

The strategy of developing research in cluster areas has demonstrated advantages for emerging research universities. Therefore, research clusters, which are basically multi-disciplinary teams of faculty members from multiple departments within and outside the Institute focused on a common theme, shall be created. They shall provide a mechanism for leveraging regional strengths, sharing limited resources, and providing opportunities for both faculty members and students.

Centres of excellence shall be created, and resources provided so that the Institute organises around the chosen major research themes.

The Institute shall strive to attract and retain excellent and diverse cohort of research students, faculty, and staff so that this core resource can deliver excellent research and innovation.

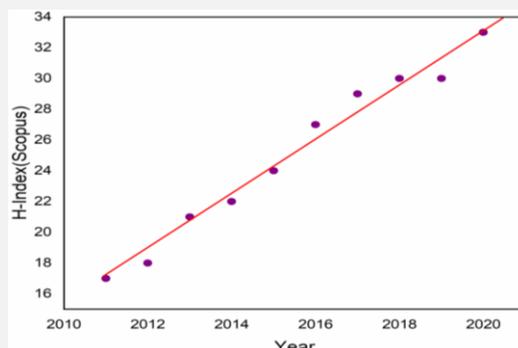
Governance, management, and budgetary structures that enable this vision shall be adopted.

12. Detailed Long-term Targets of the Institute:

The quantified long-term perspective plan targets based on baseline data of last five years are shown in the following table.

S. No.	Parameters	Baseline data (Last Five Years)	Long Term Outlook for	
			Next 5 -8 Years	Next 8 - 15 Years
1	Number of Ph.Ds.	23	50	100
2	Number of Publications in SCI/SCIE/SSCI/A&HCI indexed journals	299*	400	800
3	Number of research papers/review papers/book chapters in SCOPUS indexed journals/Conference Proceedings	961*	1100	2000
4	Number of Sponsored R&D Projects	6	20	75
5	Number of books/laboratory manuals published	62	75	100
6	Number of Patents/copyrights	12 (Filed) 10 (Granted)	20	50
7	Product Development	02	04	10
8	Number of conferences/ workshops/seminars etc. conducted to promote the research	55	75	150
9	Number of Industry Sponsored Projects	03	06	15

* Overall data since inception of Institute



Institute envisions the research outcomes in terms of an enhanced h- index, citation index, revenue generation and shall provide solutions for MSME industries (vocal for local mainly for near by industries).

Details of 5 year research is provided in **Annexure III.**

Networking Plan

NITTTR Chandigarh plans to network with Industry, R&D organizations, and Institutes of Higher learning to enhance the quality of training, research, and the academic programs to be offered at the institute. Institute proposes to network with other organizations at National and International level for students and faculty exchange to mutually benefit from the exchange. NITTTR Chandigarh plans to make renewed efforts to be recognized as a global leader in training, education and research resulting in increased international interest in the Institute. The Institute looks forward to enabling enrolment of students from foreign countries in order to increase the quantum of exchange of both graduate students and research scholars. The emphasis will be on joint innovative student projects for the former and collaborative research for the latter. The Institute also envisions networking with International universities to offer specialized programs in which the courses are offered with credit transfer. Improvements will be made continuously on campus to make NITTTR Chandigarh more welcoming to long-term international visitors. It also has the envisioned goal of increasing the level of faculty exchange. Faculty members participating in international collaborations will be involved in exchange programmes. With this in focus, institute has international tie-ups with CPSC Philippines, AIT and UNESCAP Bangkok, UNEVOC Germany etc.

NITTTR Chandigarh has tie-ups with top national institutions of repute like IITs, NITs, scientific labs and industries. In the coming years, the institute plan to strengthen this tie up quantitatively and qualitatively. For furthering and strengthening these alliances, some of the major plans to boost networking and engagement with industry and institutions are:

Experts as Adjunct faculty

Industry executives will be designated as adjunct faculty to contribute to the emerging needs of higher education system. This will aid in making the programmes more relevant to the needs of industry and employment opportunities will be enhanced keeping in mind the rapid changes in job requirements and needs of the economy.

Research oriented Industry –Institute Interactions

Research oriented Industry –institute interactions is envisioned to make an impact, for which research projects will be taken up jointly for improving the quality and quantum of research. This will be in the form of multi-pronged interactions and joint projects.

Exchange of students and faculty

Exchange of students and faculty not only promotes joint research and projects but also leads to widening of vision and exposure to new ideas. Best practices in other institutes can be learnt and adopted leading to enhancement of quality. Funding mechanisms to facilitate exchanges of scholars and faculty will be identified. Industry based PG programs are envisioned and planned to be offered at a later stage.

Faculty from Industry

Faculty from Industry shall be engaged by offering joint graduate programs with industry which shall have a high employment and industry acceptability index. Besides having them as adjunct faculty for theory courses, students shall also be sent for their research work to the industry under the joint supervision of industry faculty. The existing practice of engaging the industry faculty for training shall also be further augmented.

Placement Plan

Placement of students will be planned to meet the aspirations of the students and expectations of employers. The offered programmes will be flexible to enable customization for seekers of jobs with value addition. Students will be trained to position their research or project work and to match their specialized knowledge with job opportunities. The Institute will proactively reach out to industry and academia for good placement of graduating research scholars. M. Tech. and Ph.D. scholars will be groomed in all aspects to become professionals who are keenly sought by employers.

The Institute will encourage and support overall development of students in numerous ways. Among the benefits of such development is the advantage it bestows for employment. Students will be provided career counseling from midway through their study programmes.

Incubation centers

In the long run, the institute plans to create incubation centre to encourage start-ups and entrepreneurship. This will be especially helpful for the initial stage of the start-up and will be in line with Govt. of India's flagship initiative Atal Innovation Mission to promote a culture of innovation and entrepreneurship in the country. The incubation centre can also be used to provide skill training. The Institute will endeavor to boost the education services available in line with Skill India Mission to focus on output-based quality conscious roadmap to make skill training effective and inspirational for the youth.

International Networking

Besides the existing tie-ups, the institute shall focus on enhancing international networking through tie-ups for joint research, student exchange as mandated under QIP, Faculty exchange and training of teachers of third world countries specially from Africa and SAARC. Joint projects under different schemes with foreign universities shall be focused on.

Research interest mapping

Faculty across leading academic institutions will be paired with NITTTR Chandigarh faculty based on overlapping research interests to collaborate and co-supervise the research work of exchange scholars.

Joint academic program

Joint academic program offering including joint Ph.D. programmes is also planned with universities through building of a thriving exchange programme with the Institute that can lead to even joint patents, products, academic exchanges, conferences etc. Such programmes will serve as magnets for research scholars.

Industrial training

With the challenges of globalization and rapidly expanding industrial scenario, it is absolutely essential for the students and faculty members to update themselves at regular intervals, else the industry will march ahead, and the curriculum will be obsolete and graduates whom they produce would not match the requirements and may become unemployable. Hence this is important and NITTTR Chandigarh will plan and collaborate with industries/organizations for training.

Rural Entrepreneurship & Technology Development

The Institute has a rural development department which has been working in the rural areas under the CDTP scheme. It has also been actively engaged in developing an ecosystem of organic farming and farmers markets in the vicinity of the Institute. It is proposed to give a push to rural entrepreneurship through the Entrepreneurship Development and Industrial Coordination Cell as well as engage the Engineering Departments in development of low-cost technology solutions to enhance rural life. Focus shall also be on use of Artificial Intelligence, IOT, and other cutting edge technology solutions for rural area applications. These interventions shall lead to enhancement of rural life and rural development.

MSME and SME industry support

There is a vibrant entrepreneurial culture in the catchment area of NITTTR with MSME/SME clusters in different product categories like machine tools, bicycle, iron and steel, sports, foundry, medical equipment, IT and Electronics, Textile, Hosiery, and agricultural processing-based units. The Institute shall aspire to support these units in improving efficiency through technology upgradation, digital marketing, human resource upgradation etc.

Consultancy Projects

Industrial consultancy projects will be undertaken with more vigor that will help to generate internal revenue as well as build better synergy.

Linkage of NITTTR Chandigarh with various organizations like Industries, International Institutes, Incubators, Universities and Research Labs have been depicted in Figure 1.

Resource Sharing

There are numerous National level academic and research institutes and research labs in and around Chandigarh. NITTTR envisions a network where faculty and scholars of all these Institutes can share resources of all types including equipment, human capital, library etc. for mutual benefit.

Resource Enhancement Plan through Networking

Teaching research and extension are the trinity of higher education. A productive interface between industry and academia, in the current era of a knowledge driven economy, is critical. Industry Interface is an interactive and collaborative arrangement between academic institutions and business corporations for the achievement of certain mutually inclusive goals and objectives. Institute remains in continuous touch with industry for overall development of their students. Industry needs "ideas".

The ability to scrutinize, debate, and share experience is essential for academic and scientific accomplishment. Constructively challenging accepted opinions and ideas is central to their development, and national and international collaborations help to facilitate this. Such partnerships have contributed endlessly to academic and scientific progress.

A good networking plan can help to develop technical skills, improve ability to communicate, create relationships with potential customers or clients, build institution reputation . By knowing the ideal outcomes for your networking plan, you'll be able to steer conversations effectively and set up meetings with the right people.

Networking isn't just about you. In fact, one of the most powerful tools in a networker's arsenal is generosity. If you treat everyone as important and do what you can to help them, you'll start to build real connections and relationships that can pay off later.

That said, it's important to know where to place your focus. Determine who in your industry is most likely to be in a position to help you reach your goals — then prioritize, establish, and nurture those relationships.

Key Criterion for Networking

Full access to information. The existence of a campus network enhances teaching, learning, and research by allowing faculty, students, and staff to have participatory access to information and technological resources on the campus and in the community, region, nation, and world. The network eliminates physical isolation, and allows students at small colleges to have the same kind of information access that any student anywhere has. Without this access, institutions of higher education could become road kill along the information highway. An institution that does not participate in the information age will simply not be viable in the 21st century.

Enhanced communication. A network enhances the campus atmosphere by improving communication among faculty, staff, and students. For example, faculty and students can have closer contact and better communication, even on small campuses that pride themselves on this sort of educational interaction. Multi-disciplinary courses can be planned, facilitated, and even partially taught by faculty-to-faculty and faculty-to-student electronic mail conversations. Faculty and staff can more easily contact each other, without the typical situation of telephone tag. Student groups can arrange meetings, faculty can distribute assignments to students, students can turn in assignments, library books can be ordered from inter-library loan--these are just a few of the many ways that campus activities are facilitated by communication over a campus network.

Support for student services. A network supports student services by allowing online registration, requests for transcript information, scheduling of appointments and meetings, and submission of electronic forms for almost anything students formerly used paper forms to do. Through Web pages and Internet forms, colleges can distribute information about the college that is useful in recruiting new students. Faculty and staff at colleges with off-campus programs use the Internet to maintain close links with the students studying away from the campus, thereby helping the students carry out activities such as course registration and communication with advisers and friends.

Administrative efficiency. A network promotes administrative efficiency by providing access to institutional data, allowing better decision making, improving productivity, and facilitating reengineering of operational processes. The use of campuswide databases for student and employee records, scheduling, procurement, and other business processes leads to more efficient work, flattens hierarchies, and removes departmental barriers.

Key Criterion for Networking

Integrated information technologies. The network integrates various information technology areas by providing a central focus for management of resources and services. The network makes it easy (and sometimes imperative) to coordinate the management of computing, library automation, telecommunications, media technology, and other networked information resources. Such coordinated management allows better use of resources, helps eliminate turf issues, clarifies confusion about service sources, and allows much more efficient strategies for handling infrastructure components like cable systems.

Support for institutional advancement. A network facilitates fund-raising and good relationships with external constituencies (for example, alumni, parents, trustees, business partners) by providing new options for communicating with diverse and dispersed groups through electronic mail and World Wide Web technologies. Such linkages allow the college to build and strengthen these important ties and also provide a useful service to the college "family."

List of MOUs over last five years

Sr. No.	Organisation
1.	Institute of Research and Development, Kanpur
2.	Indian Institute of Technology (IIT), Roorkee
3.	Teachers Training Centre (TTC), Jodhpur
4.	Punjab Technical University (PTU), Jalandhar
5.	Advance Technology, Chandigarh
6.	BR Ambedkar National Institute of Technology, Jalandhar
7.	Malaviya National Institute of Technology, Jaipur
8.	Himachal Pradesh Technical University (HPTU), Hamirpur
9.	National Institute of Technology, Delhi
10.	Sardar Patel University of Police, Security and Criminal Justice, Jodhpur
11.	Gautam Buddha Technical University,(GBTU), Lucknow
12.	Guru Nanak Dev Engineering College, Ludhiana
13.	Vembsys Technovation (Pvt) Ltd., Gurgaon
14.	Arya College of Engineering & Information Technology,Kukas Industrial Area, Jaipur
15.	Telecom Sector Skill Council (TSSC), Delhi
16.	Indian Institute of Technology (Banaras Hindu University), Varanasi

List of MOUs over last five years (contd.)

Sr. No.	Organisation
17.	Bharatiya Vidya Mandir, 12/1, Nellie Sengupta Sarani, Kolkata-87
18.	Green Economy Initiatives Pvt. Ltd., 215, Silver City (Main), Ambala Chandigarh Highway Express (NH-22) Zirakpur, Punjab
19.	Dr. Fixit Institute of Structural Protection and Rehabilitation, DFI-SPR, Regent Chambers, 7th Floor, Jamnalal Bajaj Marg, 208, Nariman Point, Mumbai -400 021
20.	DeshBhagat University, Mandi Gobindgarh, District Fatehgarh Sahib -147301
21.	Indian Institute of Technology, Bombay
22.	Standard Publishers Distributors for Publishing Laboratory Manual for Fluid Mechanics
23.	Standard Publishers Distributors for Publishing Laboratory Manual for Heat Transfer, 1705-B, Nai Sarak, Delhi-110 006
24.	BIJU Patnaik University of Technology, Odisha, Rourkela
25.	Cleantech International Foundation, 128, South Park Apartments, New Delhi-110 019
26.	Lovely Professional University, Phagwara, Distt. Kapurthala, (PU)
27.	Maharaja Ranjit Singh State Technical University, Bathinda, Punjab
28.	IBM India Private Limited Subramanya Arcade, Bannerghatta Road, Bangalore
29.	Engagement Letter Skipper Electrical (Middle East) FZE Sharjah UAE
30.	Institute of Integrated Himalayan Studies (IIHS), H.P. University, Shimla
31.	Sarthak Educational Trust DG-II/248A, Vikas Puri, New Delhi-110 018
32.	M/s ULTRATECH Cement Ltd., SCO 916, 2nd Floor, Chandigarh-Kalka Road, Manimajra, Chandigarh -160 101
33.	M/s ASP Industrial Test House (P) Ltd., 87 (FF), Navyug Market, Ghaziabad (UP)
34.	Indian Institute of Architects, Punjab Chapter, SCO 53-55, 3rd Floor, Sector 17D, Chandigarh
35.	M/S ABB Global Industries and Services Private Ltd., 21st Floor, World Trade Centre, Dr. Rajkumar Road, Malleswaram West, Bengaluru-560 055
36.	M/s ABB India Limited, Bengaluru-560 055
37.	Headquarters Chief Engineer Jodhpur Zone, Opposite Military Hospital, Near ECHS Complex, Jodhpur
38.	Teachers Training Centre (TTC), Jodhpur
39.	Tech Mahindra Limited Gateway Building, Apollo Bunder, Mumbai
40.	C.V. Raman College of Engineering, Bhubaneswar (Odisha)
41.	YMCA University of Science and Technology, Faridabad (Haryana)
42.	Semi-Conductor Laboratory, Department of Space, Govt. of India, S.A.S. Nagar (Punjab)
43.	Sri Krishna College of Engineering and Technology, Sugunapuram, Kuniyamuthur, Coimbatore
44.	Quality Council of India, 2nd Floor, Institute of Engineers Building, 2, Bahadur Shah Zafar Marg, New Delhi -110002
45.	Sarthak Educational Trust (SET) Regd. Office: DG-II/248A, Vikas Puri, New Delhi 110 018
46.	Regain Our Glory Foundation, Amritsar (Punjab)
47.	MHRD, Dept. of Higher Education, MHRD, Govt. of India, New Delhi
48.	uLektz Learning Solutions Pvt. Ltd. No. 100, Lake View Estate, Kundrathur Main Road, Porur, Chennai - 600 116
49.	Eastman Cast and Forge Ltd. Ludhiana
50.	Municipal Corporation, Chandigarh
51.	ASSOCHAM GEM MoU

Targets for MoUs

Present education structure lags the required teaching learning environment to cope with the next century needs. To overcome this networking is an important aspect. NITTTR Chandigarh plans to network with Industry, R&D organizations and Institutes of Higher learning to enhance the quality of research and the programs to be offered at the institute. Institute proposes to network with other organizations at National and International level for students and faculty exchange to mutually benefit from the exchange. NITTTR Chandigarh Plans to sign MoUs with Premier Indian Institutes/Universities, International Institutes/Universities, Research and Development Organizations, Industries/ Confederations of Industries/skill based Organizations Govt. and Non-Govt. Organizations, NGOs, which will lead to an Improved quality of education to ME and other long term programs which have been proposed. The collaboration will lead to technical knowhow and enhanced quality of guidance to PhD scholars. The targeted MoUs with various organisations by the end of 15 years have been represented in Figure 8. Total 154 MoUs have been planned for the next 15 years.

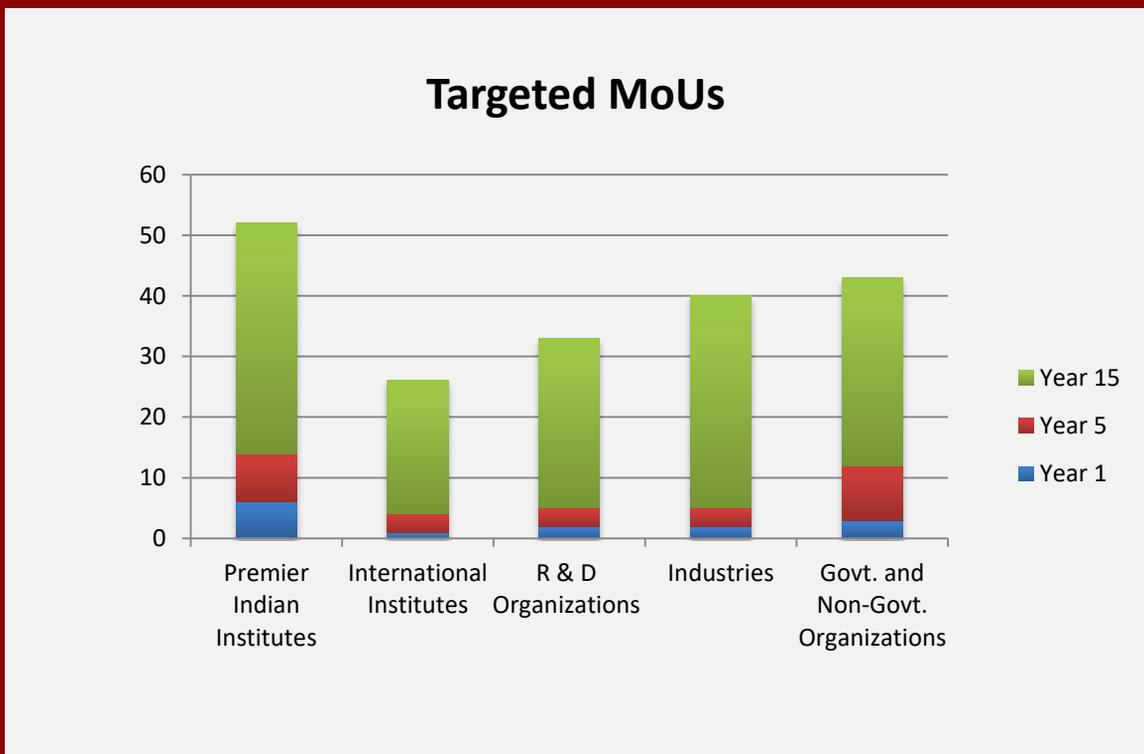


Figure 8: Targeted MoUs with various organizations

Implementation approach and Monitoring:

Interactive and collaborative arrangement between academic institutions and business corporations/organisations is essential for the achievement of certain mutually inclusive goals and objectives. It has been planned to implement the linkages with various organizations in a gradual manner. Implementation of networking will include Collaborative Training Programs for Technical Teachers, Working Professionals from Industry, conducting Joint Conferences/Seminars/Workshops in association with IITs, NITs, IIMs/, IISc etc. Implementaion of linkages will lead to Joint Consultancy Services to Industry including Conduct of diagnostic studies, Implementation of CSR funds of industry etc. Collaboration with national/international organisations/universities for faculty, staff and student exchange for global exposure for world class manpower development. Once the MoU has been signed and the criteria, value as well as respective objectives being specified, the next step is the evaluation process. The performance of the linkages will be judged annually against the targets negotiated at the beginning of the year.

Network with NGOs/Start-up

The New Education Policy 2020 emphasis the networking of all higher education institutes with NGOs and startups. This will lead to improve incubation services and diversion of students towards entrepreneurship. Joint Extension Service projects Technology Transfer concept-to-product process approach is the requirement for the next generation. And for this to happen, establishment of linkages with Innovation Centres and NGOs has been planned. It has been planned to promote the culture of Creativity and innovation which is a key component for future generation. Engineering Product development is not subject specific but is a multidisciplinary approach. The linkages with the startups would result in development of product.

Network with Industries

Network with industries is a key parameter for the suggested higher educational programmes. There is a requirement of Mapping of skill gaps in consultation with industrial needs. The linkages will help the students to work in alignment with the industry in relation to research/ taking up projects /innovations. State-of-the-art infrastructure in labs and workshops would be setup in association with industry. To establish centers of excellence in selected areas of engineering and technology with industry collaboration. Industry professionals and experts to work with institution as adjunct/visiting faculty, and project/ research guides. Take up industrial projects for enhancing faculty expertise and revenue generation. Network with industries /Confederations of Industries/skill based Organizations will lead to the linkages as shown in Figure 9.

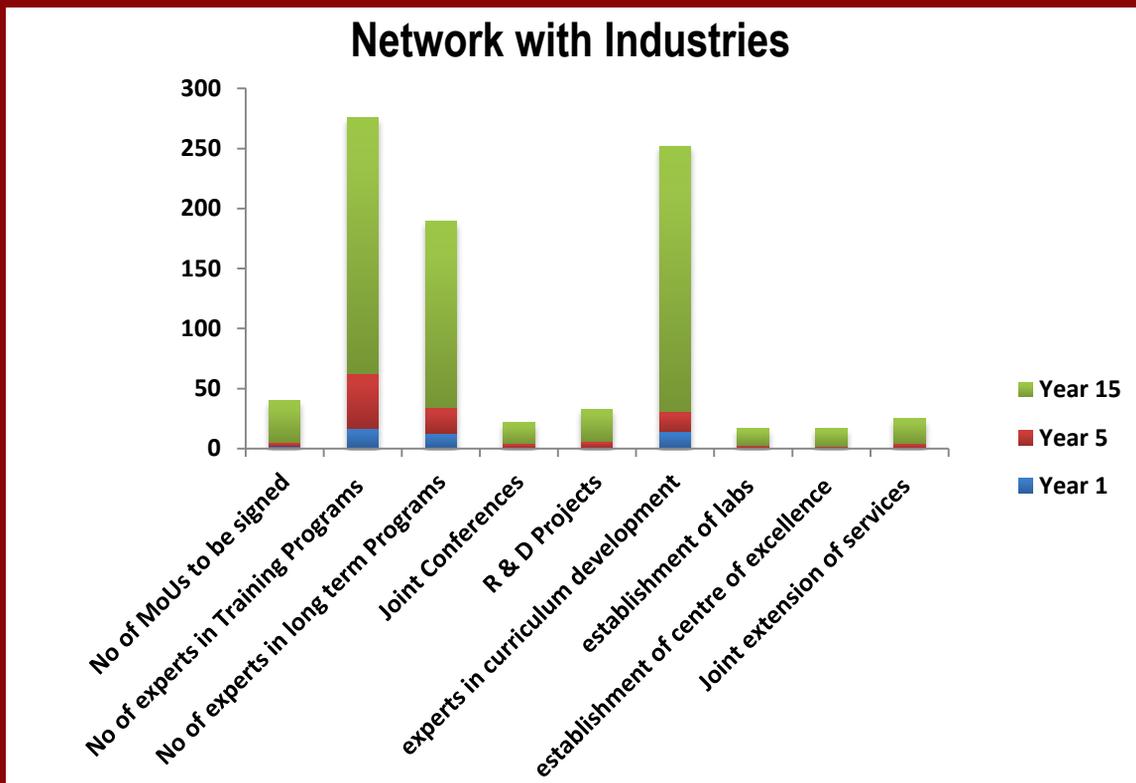


Figure 9: Network with Industries

Networking with Academic Institutions

Academic networking can play a crucial role in young students and researchers' careers, both on a social and professional level. Academic networking with leading industry, prominent intuitions and international collaboration always plays a vital role to establish carrier path of the students. Young researchers are aware that a good network is essential for professional collaboration, participation in international research grant schemes and more broadly to becoming part of the scientific community. From this perspective, specific training on academic networking could support the development of effective skills and facilitate young researchers' confidence in building professional relationships. Networking with national academics institutes like IITs/IIMs/IISc. /NITs/EDII/IRMA/XLRI etc. will lead to the linkages as shown in Figure 10 across 15 years.

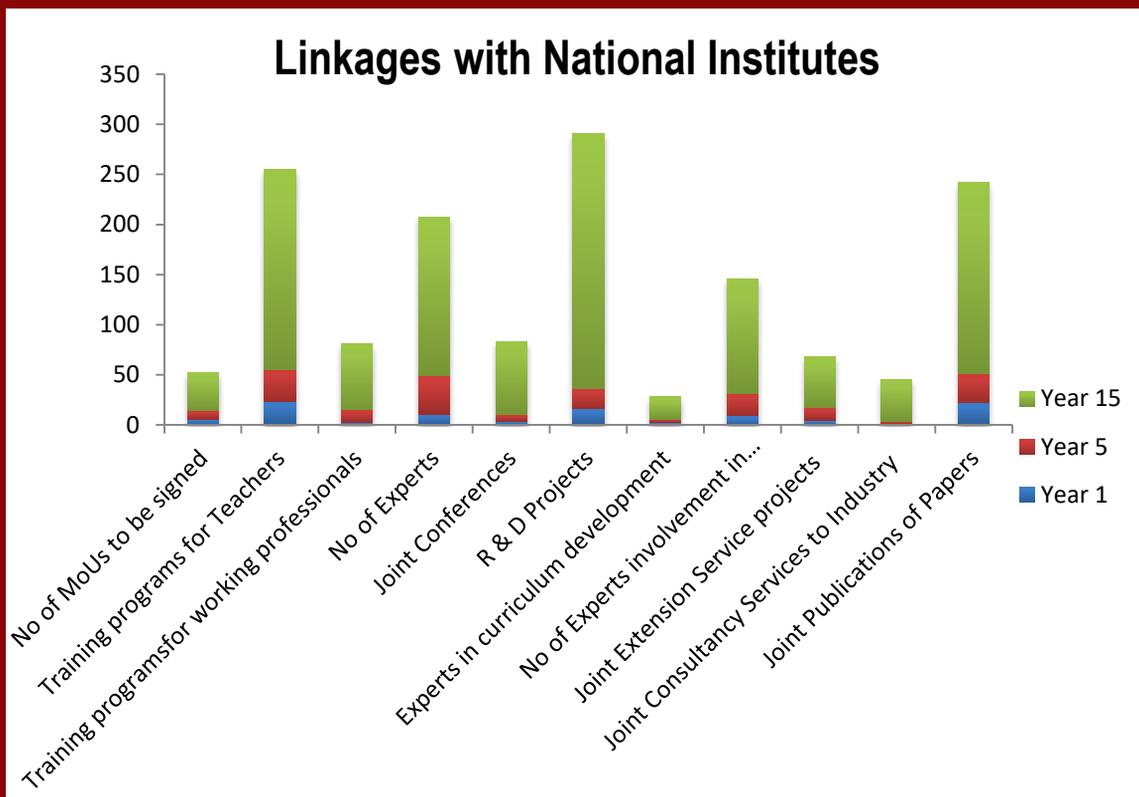


Figure 10: Linkages with National Institutes

Outputs:

Based on implementation of networking plan the following outputs are envisioned

- Enhancement of number of industry and R&D faculty
- Number of MOUs with international and national universities/industries and research labs.
- Increase in Number of exchange students
- Number of credit transfer programmes
- Number of joint conferences/seminars
- Number of joint Academic Programs
- Number of start-ups
- Number of joint patents
- Joint publications

The quantified data of the output is given in Figure 11.

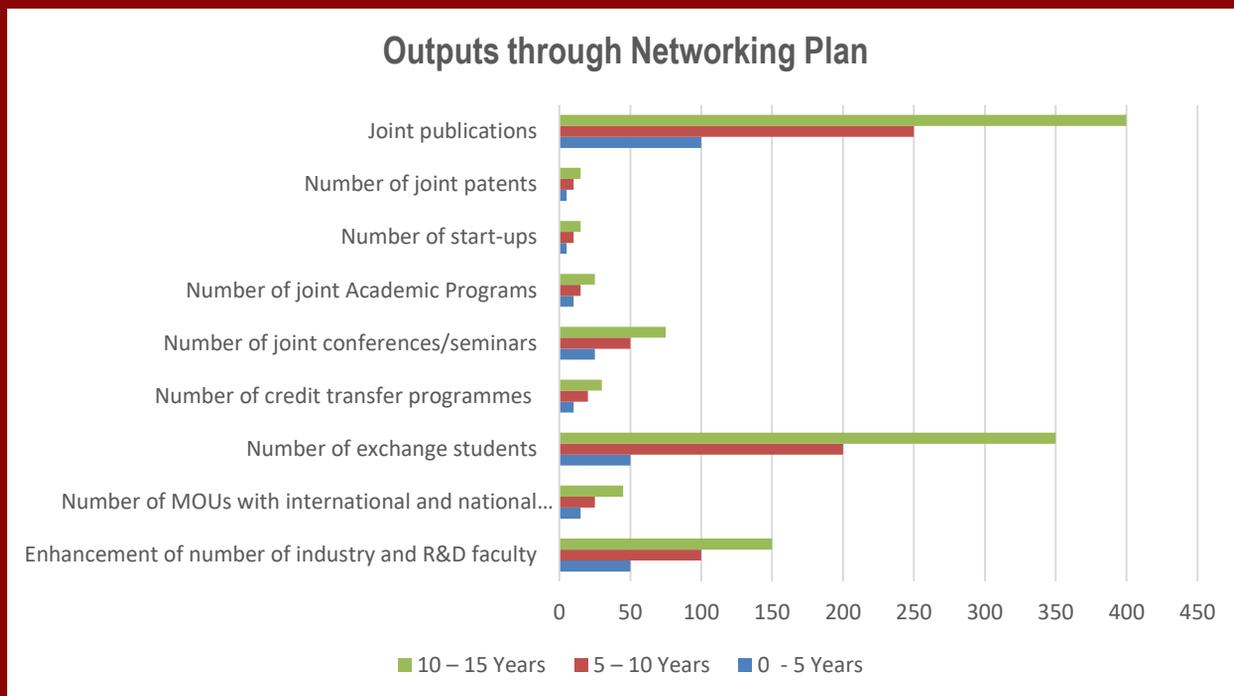


Figure 11: Expected Output through networking plan

The targeted outcomes of networking are as given under:

- Providing Industry based solutions as well as contribution to nation building through rural technologies
- Enhancement of H index of the Institute
- International exposure to students and faculty
- The implementation of networking plan will lead to enhancement of revenue for the institute
- Improved quality of instructional resources for training programmes
- Improved linkages with eco-system
- Improved implementation of schemes
- Offering of skill based courses
- International branding of the institute and state-of-the-art services to stakeholders
- Improved quality of training programs
- Sponsored Ph.D/M.Tech from Industry
- Recognition of prior learning and Continuing Education for Corporates and experience holders - certification programs
- Availability of state-of-the-art infrastructure through joint Collaborations with eminent academic institutes, research labs or corporates`

The quality gap between academic institutions in different parts of the world is a direct reflection of the wider economic and social asymmetries existing between the industrially-developed and the developing countries. The grave socio-economic situation in many developing countries, particularly the L D C s , has had inevitable repercussions on their higher education systems. Yet, as mentioned above, in today's knowledge-intensive world, sound higher education is one of the keys to human development that can reverse the trend. The question, then, is how disadvantaged education systems can escape from the vicious circle in which they find themselves.

One of the essential first steps - for which the countries and universities concerned must themselves assume primary responsibility - is that of institutional reform and, particularly, adaptation to specific needs. At the same time, international co-operation for institutional development has a vital role to play in assuring access to and in facilitating the transfer of knowledge. By virtue of their vocation, higher education institutions should be ready to assume a leading role in ensuring the universal dissemination of knowledge and in promoting the development of their fellow institutions world-wide. The challenge is to see that, in a world where rewards and opportunities are unequally distributed, mechanisms are put into place - through easier access to knowledge, through appropriate academic mobility and through increased technical co-operation among regional groupings - the knowledge and expertise are enriched, while their excessive concentration is avoided and a wider international distribution of academic excellence is achieved.

All this is not to neglect the role of competitiveness in the pursuit of knowledge. However, in the academic world, as in many other spheres of human activity, it is not possible to let affairs be governed simply by the competitive "laws of the market". Genuine academic solidarity requires the members of the world's scholarly community to be concerned not only about the quality of their own individual institution, but also about the quality of higher education and research institutions everywhere.

***“ Partnering builds Strength
Networking creates Wealth
Empowering leads Progress ”***

Infrastructure Development Plan

NITTTR Chandigarh has well established and adequate infrastructure for the current programs and the proposed programs to be started in the initial phase. It also receives sufficient fund from MoE for meeting the requirements. However, the growth plan suggested in academic programs requires some add-ons to the existing infrastructure - both physical and digital. Details of available infrastructure is annexed in **Annexure IV** and the proposed expansion based on the academic plan is depicted below:

Physical Resources

1. Chandigarh Administration, in principle, has agreed to allot 3 acres' land for second campus to NITTTR Chandigarh which will be used to develop state of art classrooms, laboratories and other facilities.
2. High end research equipment will be added to the laboratories to transform them to Centre of Excellence.
3. The existing laboratories will be modernized as per the demands.
4. Digital Resources to setup NITTTR Cloud infrastructure.
5. Develop educational products

NITTTR, Chandigarh is proposing new courses in PG Degree, PG Diploma, Advanced Diploma and Advanced Certificate to cater to the different segments of students. This is in line with the vision outlined in National Education Policy 2020 that “all higher education institutions (HEIs) shall aim to become multidisciplinary institutions and shall aim to have larger student enrolments preferably in the thousands, for optimal use of infrastructure and resources”. NITTTR aims optimum utilization of the existing infrastructure by staggering the timings of the proposed courses.

The institute has sufficient infrastructure as per the norms for most of the facilities, except for a few facilities which will be added progressively to meet the requirements, as elaborated below:

1. For the current academic session 2020-21

There is no shortage of infrastructure as per UGC/AICTE norms in terms of (a) Instructional facilities (b) Administrative facilities (c) Amenities (d) Computers, Software, Internet & Printers and (e) Books, Journals & Library facilities.

2. For the academic sessions 2021-22 to 2025-26

2.1 Instructional Facilities

The institute will require an additional classroom/tutorial-room carpet area of 452 sqm, 370 sqm, 627 sqm, 198 sqm and 132 sqm in each academic session from 2021-22 to 2025-26, which will be made available. The institute has adequate number of laboratories available with sufficient carpet area. However, the number and variety of equipment in the laboratories will be upgraded as per the additional intake and requirements of the new courses introduced over the next 5 years. The Computer Centre will require a minor increment of 38 sqm in carpet area in the year 2023-24 which will be sufficient for the subsequent years. Similarly, the carpet area of the Seminar Hall will also be increased by 26 sqm by next year to meet the requirement as per norms.

2.2 Administrative Facilities

The administrative facilities are sufficient in all respects.

2.3 Amenities

Though the Cafeteria has sufficient area with open space included, still the covered area of the Cafeteria will be enhanced by 51 sqm to meet the norms exactly. An additional hostel facility for about 1000 students will be added by next year which will be augmented over the time to provide adequate hostel facilities to the students.

2.4 Computers, Software, Internet & Printers

The facilities pertaining to Computers, Software, Internet & Printers required are sufficient except for the application software for the new courses, which will be made available by June 2021.

2.5 Books, Journals & Library facilities

The Books, Journals & Library facilities available in the institute are sufficient for the proposed courses. Only a minor expansion in the Reading Room capacity with effect from 2022-23 is needed which will be done.

Finance Plan

NITTTTR Chandigarh is a fully funded autonomous body under MoE, Government of India. MoE will continue to fund the Institute for Plan and non-plan expenditure. However, to meet the increased expenditure due to increase in the number of programs consequently in the number of students, the institute expects to get additional revenue from the MoE and by starting self-financing programs, tie-up with industry for assistance in setting up of laboratories and enhanced consultancy work. Institute has created corpus fund which will be used to meet the mandatory requirements of UGC and for other purposes as per the conditions of creation of corpus fund.

- **Details of Corpus Fund created:**

Funds generated by the Institute are kept in the form of FDRs with the Scheduled Banks. Some Funds are kept in the saving Bank Accounts to meet the immediate need of the Institute. Funds generated by the Institute are used to cover the expenditure on the 'Operation and Maintenance' of the Institute. Rs. 27.95 crores are available in the corpus fund established by the Institute. No grant-in-aid is received from the Government of India for 'Operation and Maintenance'.

At present FDRs amounting to ₹ 31.91 crore have been with the scheduled Banks. An amount of ₹ 4.15 crore is in the saving Bank Account with the scheduled Banks. Out of the total ₹ 36.06 crore there is liability of ₹ 8.11 crore on account of Security Deposit, EMD, Consultancy and Sponsored Projects. Net amount of ₹ 27.95 crore pertains to the Institute.

- **Details of the financial sustainability of the Institution**

Funds for salary and allowances of the faculty and non-faculty staff, funds for creation of capital assets which includes purchase of equipments, renovation of institute building, purchase of furniture, vehicles, library books etc are provided by the Govt. of India. In addition, funds for payment of monthly pension of Institute pensioners, salary of contractual staff and expenditure incurred on STC/ICT programme is also provided by the Govt. of India. Funds provided by the Govt. of India are expended judiciously on the specified activities.

The institute has 35 QIP PhD fellowships per year (15 QIP-Poly., 20 QIP-Engg) for which the funds are provided by AICTE.

Finance Plan

The institute receives fellowship for Ph.D. from industries. The students of this institute pursuing ME/Ph.D. are also eligible for various scholarships/ fellowships.

- **Financial Income enhancement plan**

Financial Income of the institute is planned to be enhanced by offering various degree awarding programmes at national and international level, increasing the consultancy, paid training programs and the user charges of the various services provided by the Institute.

- Enhance number of industry fellowships
- More sponsored projects
- International collaborative projects
- Enhance students under various govt. schemes.

The details of the grant in aid received by the Institute during the last five years and other financial details are given below:

STATUS OF GRANT IN AID (Rs in lakhs)		
YEAR	OPENING BALANCE	GRANT IN AID RECEIVED
2015-16	-153.55	3177.20
2016-17	-239.61	3196.06
2017-18	123.22	4096.31
2018-19	1,133.51	3345.40
2019-20	153.53	4169.25

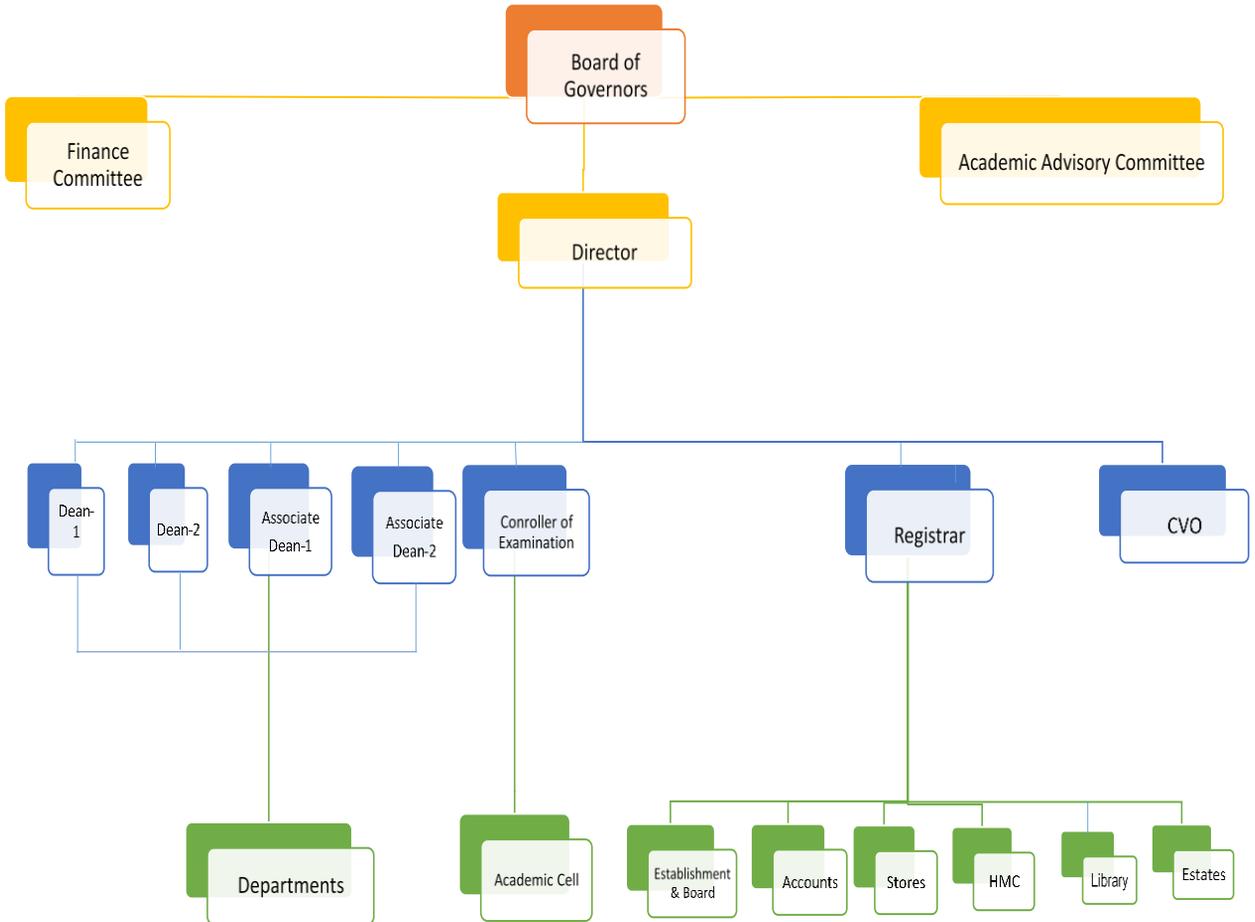
IRG OF THE INSTITUTE		
YEAR	Opening Balance	Amount
2015-16	1107.59	419.35
2016-17	1249.72	245.20
2017-18	1209.83	685.73
2018-19	1028.52	535.40
2019-20	1258.35	545.77
2020-21	25.0	Additional Revenue expected through new programmes
2021-22	50.0	
2022-23	100.0	
2023-24	150.0	
2024-25	200.0	
2025-30	> 450.0	
2030-35	> 600.0	

The Institute is already operating as autonomous institute with adequate administrative setup for running the Institute as a Deemed-to-be-university. In addition to the academic departments, establishment section and accounts section, Institute has academic cell which looks after the student related activities starting from admission to conduct of examination and preparation of results. The academic cell coordinates with the affiliating university for academic matters. However, the existing facilities in the Institute will need to be upgraded and new facilities have to be created to cater to the requirement of the Deemed to be University system.

However the additional administrative arrangements as required will be made as the Institute has experienced faculty members to take care of the academic requirements of a deemed-to-be-university. For the department level academic decisions, Board of Studies will be constituted.

Administrative structure for the Institute on being granted with the status of Deemed to be University is depicted on the following page:

Administrative Plan



Dean-1: Dean, Academics, Research & Development
Dean-2: Dean, Industrial Coordination, Consultancy & Extension Services
Associate Dean-1: Products Development
Associate Dean-2: Internal Program and Student Welfare

As on today, the administrative plan is steered to meet the performance requirements as per agreed terms under MoU with Ministry. The institute signs MoU every year with Ministry. One such MoU on institutional target setting and performance evaluation is given below:

Format of Performance Evaluation Parameters for the Institute

Sl. No.	Criteria	Existing Levels	Targeted Levels	Unit	Weighted	Criteria Value				
		Average of previous three years (X)	2020-21 (Y)			1	2	3	4	5
						Excellent (10 pts)	V. Good (8 pts)	Good (6 pts)	Fair (4 pts)	Poor (2 pts)
						Equal to Y (Target value)	Less than Y but equal to $X+0.8(Y-X)$	Less than figure in column 8 but equal to $X+0.6(Y-X)$	Less than figure in column 9 but equal to $X+0.4(Y-X)$	Less than figure equal to $X+0.4(Y-X)$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1.	Education & Training				50%					
1.	Training -Person Week (PW)				40%					
1.1	PW through Contact-mode	3474	3500	No.	20%	10 pts (2)				
1.2	PW through ICT-mode	12877	13000	No.	10%	10 pts (1)				
1.3	Trainee Trainer Ratio in			Ratio	5%					
	ICT-mode training	5:1	5:1		2%	10 pts (0.2)				
	Contact mode training	25:1	25:1		3%	10 pts (0.3)				

Format of Performance Evaluation Parameters for the Institute (contd..)

1.4	Total Number of Training Programs			No.	5%					
	1 Week duration	265	300		2%	10 pts (0.2)				
	2 Weeks duration	7	10		2%	10 pts (0.2)				
	More than 2 Weeks duration	1	1		1%	10 pts (0.1)				
2.	Other Training programme (less than 1 week)			No.	5%					
2.1	Training Programme conducted	22	25	No.	3%	10 pts (0.3)				
2.2	Trainees attended	1698	1700	No.	2%	10 pts (0.3)				
3.	Education				5%					
	Student Strength									
3.1	PG Regular Student Intake	85	60	No.	1%					2 pts (0.02)
3.2	PG Part-time/Modular /In-service person Intake	75	50	No.	1%					2 pts (0.02)
3.3	PhD Student Intake	09	09	No.	1%	10 pts (0.1)				
3.4	QIP PhD Student Intake	08	08	No.	1%	10 pts (0.1)				
3.5	Student Teacher Ratio	5:1	5:1	ratio	1%	10 pts (0.1)				

Format of Performance Evaluation Parameters for the Institute (contd..)

II.	Curriculum Development & Professional Practices				30%					
4.	Number of Curriculum Developed				10%					
4.1	Curriculum Revised	22	25	No.	5%	10 pts (0.5)				
4.2	Curriculum newly developed	5	5	No.	5%	10 pts (0.5)				
	Research and Professional Practices	-								
5	Research and Professional Practice Outcomes	-			10%					
5.1	Combined Metric for No. of Publications	270 *	275	No.	3%	10 pts (0.3)				
5.2	Combined Metric for Quality of Publications (SCI Only)	15	20	No.	2%	10 pts (0.2)				
5.3	Students Awarded Post Graduate Degree	173	150	No.	1%					2 pts (0.02)
5.4	Students Awarded Ph.D. Degree	05	05	No.	1%	10 pts (0.1)				
5.5	Placement of student	-	-	No.	0%					

***No. of publication in National/International Journals and Conferences**

Administrative Plan

Format of Performance Evaluation Parameters for the Institute (contd..)

Sl. No.	Criteria	Existing Levels Average of previous three years (X)	Targeted Levels 2020-21 (Y)	Unit	Weighted	Criteria Value				
						1	2	3	4	5
						Excellent (10 pts)	V. Good (8 pts)	Good (6 pts)	Fair (4 pts)	Poor (2 pts)
						Equal to Y (Target value)	Less than Y but equal to $X+0.8(Y-X)$	Less than figure in column 8 but equal to $X+0.6(Y-X)$	Less than figure in column 9 but equal to $X+0.4(Y-X)$	Less than figure equal to $X+0.4(Y-X)$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
5.6	Research studies on Technical Education/ Sponsored Projects	21	21	No.	1%	10 Pts (0.1)				
5.7	Revenue Generated through Consultancy/ Research	229.83 Lacs including recruitment tests	230 Lacs excluding recruitment tests	Rs.	1%	10 Pts (0.1)				
5.8	Collaboration with Academia & Industry (National and International)	20-25 nos. organizations	20-25		1%	10 Pts (0.1)				

Format of Performance Evaluation Parameters for the Institute (contd..)

	Instructional Resource Development				10%				
6.	Number of Instructional Resources developed								
6.1	Publication of Books / Laboratory Manual	20	15	No.	1%				2 pts (0.02)
6.2	Development of Training Materials	86	100	No.	3%	10 Pts (0.3)			
6.3	Development of Educational Video Films	128*	150	No.	3%	10 Pts (0.3)			
6.4	Instructional Learning Materials for MOOCs	120**	120	No.	3%	10 Pts (0.3)			

***this excludes lecture based films**

****only from 2017-18 onwards**

Format of Performance Evaluation Parameters for the Institute (contd..)

Sl. No.	Criteria	Existing Levels		Targeted Levels		Criteria Value				
		Average of previous three years (X)	2020-21 (Y)	Unit	Weighted	1	2	3	4	5
						Excellent (10 pts)	V. Good (8 pts)	Good (6 pts)	Fair (4 pts)	Poor (2 pts)
						Equal to Y (Target value)	Less than Y but equal to $X+0.8(Y-X)$	Less than figure in column 8 but equal to $X+0.6(Y-X)$	Less than figure in column 9 but equal to $X+0.4(Y-X)$	Less than figure equal to $X+0.4(Y-X)$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
III.	Services for community and industry				5%					
7.	Number of services rendered									
7.1	Workshop /Seminar/ Conference organized at Regional Level			No.	2%					
	No. of Programs	22	25		1%	10 Pts (0.1)				
	No. of Participants	1698	1700		1%	10 Pts (0.1)				
7.2	National Seminar/ Conference organized			No.	2%					
	No. of Programs	5	5		1%	10 Pts (0.1)				
	No. of Participants	687	700		1%	10 Pts (0.1)				
7.3	International Programmes Organised			No.	1%					
	No. of Programs	3	3		0.5%	10 Pts (0.05)				
	No. of Participants	464	500		0.5%	10 Pts (0.05)				

Format of Performance Evaluation Parameters for the Institute (contd..)

IV.	Fund Allocation				5%					
8.	Financial parameters									
8.1	% of total cost recovery by means of fees and other resources, except MHRD funds	4%	5%	%	1%	10 Pts (0.1)				
8.2	% utilisation of funds received from MHRD.	95%	97%	%	4%	10 Pts (0.4)				
V.	Outreach and Inclusivity				8%					
9.	Outreach and Inclusivity Components									
9.1	Percentage of trainees from other States	21	21	%	1%	10 Pts (0.1)				
9.2	Percentage of female trainees	35	35	%	1%	10 Pts (0.1)				
9.3	Percentage of trainees from SC, ST, OBC categories	15	15	%	1%	10 Pts (0.1)				
9.4	Percentage of girl students	35	35	%	0.5%	10 Pts (0.1)				
9.5	Percentage of Students from SC, ST, OBC categories	33	33	%	0.5%	10 Pts (0.1)				
9.6	No. of cases reported related to sexual harassment	Nil	Nil	No.	0.5%	10 Pts (0.05)				
9.7	No. of ragging cases reported	Nil	Nil	No.	0.5%	10 Pts (0.05)				

Format of Performance Evaluation Parameters for the Institute (contd..)

9.8	Special Programme for National initiative				3%					
	No. of Programmes	08	05		1%	10 Pts (0.1)				
	No of Trainees attended	497	500		1%	10 Pts (0.1)				
	Other special Programmes									
	No. of Programmes	02	03		0.5%	10 Pts (0.1)				
	No of Trainees attended	40	60		0.5%	10 Pts (0.1)				
VI.	Infrastructural upgradation				2%					
10.	Infrastructure creation (where applicable, in other cases weightage will be zero)									
10.1	Infrastructure / Facility created during the year				2%					
	Area developed/upgraded	2119	1000	Sq Mtr						
	Expenditure (in lacs)	330	250	Rs. Lakh						
	Equipment added to the laboratories (in lacs)	449.75	500	Rs. Lakh						

Format of Performance Evaluation Parameters for the Institute (contd..)

Sl. No.	Criteria	Existing Levels	Targeted Levels	Unit	Weighted	Criteria Value				
		Average of previous three years (X)	2020-21 (Y)			1	2	3	4	5
		Excellent (10 pts)	V. Good (8 pts)			Good (6 pts)	Fair (4 pts)	Poor (2 pts)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Parameter: Performance Assessment									
11.	Overall Performance		100%							
11.1	Accreditation by NBA	3 courses	2 courses							
	TOTAL		100%							

Overall Score of an Institution would be calculated as follows:

$$= \text{Sum (Score of each Parameter} * \text{Parameter weightage) } * 100 / \text{Total weightage}$$

1. If any parameter is not applicable to any Institution, the same may be substituted/modified/ deleted from this list. The overall weightage obtained by adding Column 6, will be the denominator for calculation of % performance
2. Existing level will be decided by taking the average values of last three years from 2014-15, 2015-16, 2016-17, except in case of NIRF, where it will be the Rank in 2016-17. If the 2016-17 parameter is not yet available at the time of signing of MoU then average of two years 2014-15 and 2015-16 would be taken. If the Institution did not participate in NIRF Ranking in 2016-17; a notional ranking of 500 would be given for the year 2016-17 for calculation purposes.

Format of Performance Evaluation Parameters for the Institute (contd..)

3. The Institution and the Ministry would arrive at an agreement on which NIRF Ranking category should be applied for the Institution and then the evaluation would be done on performance in that category only. A change in category would be permitted during the course of the year only if the chosen category is not being taken up by NIRF for categorisation in the year 2017-18.
4. For parameters like ragging cases, anti-sexual harassment cases and NIRF ranking, a lesser value than existing level would be taken as successful achievement, and achievement parameter would be accordingly modified.
5. Score given on each parameter would be as follows: Excellent – 10; Very Good – 8; Good – 6; Fair – 4; Poor – 2
6. If an Institution does not participate in NIRF Ranking exercise in the current year, the weightage would remain at 20 for the NIRF parameter and the institution would get a zero score on it.
7. Overall Score of an Institution would be calculated as follows; $\text{Sum (Score of each Parameter} \times \text{Parameter weightage)} \times 100 / \text{Total weightage}$.

Overall score== 9.78

Governance Plan



Institute is running under the guidance of the Board of Governors assisted by the Finance Committee and Academic Council. Director of the Institute being the executive head of the Institute is responsible for the academic and administrative functions of the Institute. Institute governance is as per the guide lines of Government of India. The institute will constitute the additional bodies committees to meet the requirements for efficient governance of the Deemed to be university. To make the governance more participative and decentralized and to achieve goals within a time-line, the institute recently created 8 taskforces which are listed below. However, to facilitate the smooth, unambiguous and transparent governance, the institute constitutes various committees on yearly basis. A copy of the same is also presented below (**Annexure V**). The institute will continue to follow these best practices. However, if need be and if felt during periodic review, appropriate actions will be initiated to enhance/improve the governance. To evaluate and help the departments, rubrics have been designed. The same is presented here.

8 Task Forces

Activity - I
Academic Programmes and Training

Activity - II
Aatmanirbhar Bharat Abhiyaan

Activity – III
Community Development through Polytechnics

Activity - IV
Unnat Bharat Abhiyaan

Activity – V
War Room for Industrial Consultancy

Activity – VI
R&D, Consultancy and Patenting

Activity – VII
On-line Instruction Material Development

Activity-VIII
In-house Product Development

Evaluation Rubrics for Assessment of Department Performance

Name of the Department :
 No. of Faculty :
 No. of Technical Staff :
 No. of Supporting Staff :
 Evaluation Period :

Dimensions	Key Performance Criteria (KPC)	5	4	3	2	1
I. Academics Achievements						
Programmes offered (Ph.D.)	<ul style="list-style-type: none"> Ph.D. Course work offered by the department have well defined curriculum Instructions are planned based upon well-defined learning outcomes that make it easy for students to clearly understand all components and structure of the course Course is designed as per the expectations of the stakeholders Half yearly progress presentation by the scholar is made timely 					
Programmes offered (M.E.)	<ul style="list-style-type: none"> ME Course offered by the department have well defined curriculum Instructions are planned based upon well-defined learning outcomes that make it easy for students to clearly understand all components and structure of the course Course is designed as per the expectations of the stakeholders Assignments/sessional tests and final examination answer sheets are evaluated timely ME thesis is submitted and viva-voce test is conducted timely 					
Programmes offered (PG Diploma)	<ul style="list-style-type: none"> PG Diploma Course offered by the department have well defined curriculum Instructions are planned based upon well-defined learning outcomes that make it easy for students to clearly understand all components and structure of the course Course is designed as per the expectations of the stakeholders 					

Programmes offered (Advance course)	<ul style="list-style-type: none"> Advanced Courses offered by the department have well defined curriculum Instructions are planned based upon well-defined learning outcomes that make it easy for students to clearly understand all components and structure of the course Course is designed as per the expectations of the stakeholders 					
Quality Admissions	<ul style="list-style-type: none"> Students enrolled are selected through well-defined criteria 					
Short Term Training Programmes Organized	<ul style="list-style-type: none"> Exhibits professionalism in organizing training programmes Exhibits preparedness in organizing need based training programmes in emerging areas Organizes training programmes for industry and officials of other organizations other than faculty Identifies the experts and develops instructional material 					
Professional Development	<ul style="list-style-type: none"> Updates knowledge and skills of the faculty by attending training programmes in reputed institutions on continuous basis Faculty plan new programmes/events for the students which, in turn, enhance their knowledge Faculty conduct and attend various STC for industries and other organizations for mutual benefit 					
Develops e-content for MOOCs	<ul style="list-style-type: none"> Develops MOOCs for faculty and students for various platforms 					

II. Faculty and their Contributions

Teaching Effectiveness	<ul style="list-style-type: none"> A minimum of 50% load is taken by the faculty for the courses/STCs organized as coordinator Acts as a team member for organizing STCs Coordinated by fellow faculty in/outside department Teaching is developmental rather than directive 					
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	<ul style="list-style-type: none"> • Uses innovative techniques to enhance learning • Provides Research Notes from different sites • Designs assessment for continuous improvement of the learners 					
Development of Learning Resources	<ul style="list-style-type: none"> • Develops good quality instructional material (both Print and Non-print) • Designs and develop MOOCs in area of specialization and other allied areas also • Develops other digital resources for the students and for the STCs participants 					
Competency Developed	<ul style="list-style-type: none"> • Exhibits proficiency in planning various goals, initiatives and activities in the department • Organizes courses/STCs in emerging areas of specialization along with other relevant courses • Designs Cluster programmes to provide enriched learning experience to participating faculty 					
Research Contribution	<ul style="list-style-type: none"> • Conducts action and applied research in specialized area • Contributes in developing and disseminating research by publishing papers in reputed journals (SCI/Scopus/ Others), Chapters in books/books • Writes Popular articles/News Magazine articles • Acts as a mentor to guide the students for the completion of their ME & Ph.D. Theses • Undertakes sponsored projects to promote research and handles consultancy from academia and industry both 					
Work Ethics and Professionalism	<ul style="list-style-type: none"> • Exhibits preparedness and punctuality in various activities designed • Works in team and collaborates to take new initiatives for the department 					

III. Infrastructure in the Department

Classrooms and Laboratories	<ul style="list-style-type: none"> Existing Classrooms and laboratories utilization (Infrastructure, resources, materials and equipment's) are adequate Shares resources/ infrastructure with other departments (Please Specify) Upgradation plan of existing resources (Classroom & Laboratory) 					
Digital Resources	<ul style="list-style-type: none"> Smart classrooms with all kind of facilities that promote e learning are available Internet connectivity (Wi-Fi and Ethernet facility) is there in all the work spaces, classrooms, laboratories 24x7 even for the students 					
Maintenance of all Safety Standards	<ul style="list-style-type: none"> Observes all safety precautions and measures to prevent any hazard (electrical, fire, etc.) at department level and carries out periodic assessment for the same 					

IV. Revenue Generation and Sustainability

Development of Resources	<ul style="list-style-type: none"> Develops resources, i.e., educational packages, online courses, application based software, print, non-print material, testing facilities 					
Involvement in Consultancy Services	<ul style="list-style-type: none"> Conducts paid training programmes for industry and other organizations Provides academic services to industry and other organizations on payment basis 					

V. Networking and Extension Services						
Assistance to Apex Bodies	<ul style="list-style-type: none"> Provides assistance to National Bodies for developing courses, curriculum, organizing examination 					
Sharing of Expertise Available	<ul style="list-style-type: none"> Delivers invited talks, key note addresses etc. in National & International events Provides academic assistance to other organizations (if any) 					
Liasioning	<ul style="list-style-type: none"> Signs MOUs with institute of national repute Established linkages with industries for mutual benefits Invites experts from industry and academia for STCs and students 					
VI. Student-Centric Activities						
Events Organized	<ul style="list-style-type: none"> Conducts various training programmes and other technical events for students Organizes industrial/field visits for the students 					
Feedback Analysis	<ul style="list-style-type: none"> Obtains and provides feedback on continuous basis analysis and corrective measures taken 					
Mentoring and Counselling	<ul style="list-style-type: none"> Establishes Mentor-mentee teams to help students for their career growth 					
Organization of Extracurricular and Social Activities	<ul style="list-style-type: none"> Students are independently running various clubs and helping the society by joining various NGOs Supports these activities by providing additional budget Ensures faculty and staff contribution/ participation in such events 					

Faculty Recruitment Plan

NITTTR Chandigarh is an autonomous Institute, fully funded by Ministry of Education, Government of India. The creation of post for faculty and staff is decided by the funding body based on the requirement of the Institute. The Institute has sufficient faculty to run the existing and proposed programs in the first phase. However, as the student strength and the number of programs increases, MoE will be approached for creation of additional posts. However, to meet any requirements to run the programs to be launched after the first phase, additional posts will be requested from MoE and some faculty will be recruited against the revenue generated by the self-financing programs. The additional faculty and staff requirement for launching additional programs and activities works out as under:

- In plans to have faculty to teach various courses, Govt. of India will be requested for sanction of additional faculty (20), industry experts will be designated as adjunct faculty (30), self financing faculty (50) and explore for sponsored faculty (5-10).
- Self financed faculty to teach in change based programmes in emerging areas
- Visiting faculty(National and International level) and Project leaders from reputed organisations and industries for cutting edge areas
- Adjunct faculty from industries
- Additional sponsored faculties
- Honorarium based engagement of retired faculty.
- Additional 150 technical staff/secretarial staff

Faculty requirement for the next 15 years is given in the following table :

Period	Faculty Hiring Plan			Total
	Assistant Professor	Associate Professor	Professor	
5 Years	10	10	5	25
10 Years	15	10	25	50
15 Years	5	10	25	40

Training/Industrial exposure

To train and improve quality by imparting new skills to faculty and staff it is proposed to: Establish improved faculty orientation and mentorship programme for faculty members with international collaboration.

- Exchange programmes in national and international level.
- Skill based training to employees in new cutting edge areas to name a few, smart sensors, block-chain technologies, industrial IoT, structural analysis, Big Data Analytics etc.
- Impart training to employees through MOOCs based training/ Virtual laboratories.
- International exposure to existing faculty.
- Industry attached training for real life exposure.
- Exchange Ph.D. programmes with universities abroad/Institute of National importance
- Skill based training to employees in new cutting edge areas to name a few, smart sensors, block-chain technologies, industrial IoT, structural analysis, Big Data Analytics etc.
- Impart training to employees through MOOCs based training/ Virtual laboratories.
- International exposure to existing faculty.
- Industry attached training for real life exposure.
- Exchange PhD programmes with universities abroad/institute of National importance

The quantitative and qualitative periodic evaluation of faculty is in-built in the system to ensure the quality and also help in achieving the goals. The proforma of the faculty evaluation on quarterly basis is given below. This help individual to take timely remedial action. This is different from the annual appraisal of faculty and staff.

Faculty Performance Appraisal Report

Indicator: I

Performance Score Sheet

Minimum Score: 50
(a)+(b)

Submission Dates (Non-negotiable)

- 15 July for the period April to June
- 15 October for the period July to September
- 15 January for the period October to December
- 15 April for the period of January to March

SHORT-TERM COURSEs (a)

Maximum Marks for each STC: 5

Sl. No	Title of Planned STCs	Status [Conducted/Conducted after rescheduling]	Conducted with IIT Experts+ Industry Experts + Self	Conducted by self only	Conducted with joint faculty/ Expert (other than IIT/Industry)	Conducted with expert from industry/ R&D+ Self
			(A)	(B)	(C)	(D)
			[5 marks]	[5 marks]	[3 marks]	[5 marks]

- If conducted after rescheduling, deduct 1 mark
- Award – (minus) 2marks for cancelling
- For ICT Mode, the maximum participants should be 40 (for core area) and 75 (for pedagogy & allied areas)
- If No. of participants in contact mode is less than 10, then award – (minus) 1 mark
- If more than 20, award +2 marks
- (For pedagogy courses, this limit is 15 & 25 respectively)
- If conducted at outside venue, award +1 mark
- If 3 or more Professors from IIT/Experts from industry engaged in a five-days STC, then add 2 marks

Self-SCORE	SCORE [HOD]	SCORE [Committee]

Faculty Performance Appraisal Report

ME/M.Tech Classes (b)

Subject Name	Semester/Spell Starting Date: Ending Date:	No. of classes required as per Time Table	Class actually covered	No. of classes by experts/ Joint Faculty	Name of the Experts or/and Joint Faculty

Experts engaged from industry. Name and No. of hours	Experts engaged from IIT/IISc. Name and No. of hours	Self-Score	Score awarded by HOD	Score awarded by Committee

Subject in a Semester/Spell	Classes covered 80- 100%	Covered by self/ self and industry experts or self and IIT Experts	Covered by self and Joint Faculty or self and Experts (other than industry/IIT)	Classes covered less than 80%
A	B	C	D	E

- Marks shall be awarded only on completion of Semester/Spell
- No interim marks shall be awarded
- If classes conducted jointly, then the score will be equally divided
- Score is per subject/semester/spell
- A=Subject Title
- If taken two subjects in a Semester/Spell, then calculate the Score for 2nd Subject in the similar line

SCORE

$$\mathbf{B + C = 6}$$

$$\mathbf{B + D = 3}$$

$$\mathbf{E + C = 0}$$

$$\mathbf{E + D = 0}$$

Faculty Performance Appraisal Report

Indicator: II

Minimum Score:15

INSTRUCTIONAL MATERIAL

(A)	MOOCs for SWAYAM (Per Module)	SCORE	SCORE [HOD]	SCORE [Committee]
	(a) Video recorded[5 marks]			
	(a) e-Content prepared[5 marks]			
	(a) Video + e-Content prepared + launched[15 marks]			

(B)	MOOCs for other Sources including NCTEL (Per Module)	SCORE	SCORE [HOD]	SCORE [Committee]
	(a) Video recorded and uploaded [6 marks]			
	1.			
	(a) e-Content prepared and uploaded[9 marks]			
	(a) Video + e-Content prepared and uploaded[15 marks]			

		SCORE	SCORE [HOD]	SCORE [Committee]
(C)	e-Book Published[15 marks]			
(D)	Books Published[International 15 marks, Indian 10 Marks]			
(E)	Laboratory Manual Published[5 marks]			
(F)	STC/ME Instructional material Published and uploaded[5 marks]per STC/Course			
(G)	International Book Chapter Published[7 marks]			

Faculty Performance Appraisal Report

Indicator: III

Minimum Score:20

RESEARCH & DEVELOPMENT AND CONSULTANCY

Sl. No.	Project Title	Submitted to [Name of the Funding Agency]	Status Under Review	Amount asked for*	SCORE [Self]	SCORE [HOD]	SCORE [Committee]
1.	*						

1.	* Project Title	Awarded by	Amount sanctioned**	Duration and Due Date of Completion	SCORE [Self]	SCORE [HOD]	SCORE [Committee]

1.	* Title of the Consultancy Project	Awarded by	Nature of Works	Amount claimed and accepted or sanctioned***	SCORE [Self]	SCORE [HOD]	SCORE [Committee]

1.	Title of the Paper	Publisher and Name of the Journal	Thomson Router/SCI/Scopus/UGC Approved [please specify]	Date of acceptance and due date of publication	Impact factor of the Journal	SCORE [Self]	SCORE [HOD]	SCORE [Committee]

- Thomson/SCI = 10 marks/paper
- UGC = 2 marks/paper
- Scopus = 5 marks/paper

Faculty Performance Appraisal Report

* Amount 5 to 15 lakhs : 3 marks Amount > 15 lakhs : 6 marks	** Upto 5 lakhs : 10 marks 5-15 lakhs : 15 marks >15 lakhs : 20 marks	*** Upto 3 lakhs : 5 marks 3~5 lakhs : 10 marks >5 lakhs : 15 marks
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5.	+	Patent filed+	Title/date	Ref. No.	SCORE [Self]	SCORE [HOD]	SCORE [Committee]

6.	+	Patent	Awarded with Number++	Technology Transfer with Name of Company+++	Amount	SCORE [Self]	SCORE [HOD]	SCORE [Committee]

7.	+	Curriculum Designed	Sponsored Agency	Amount++++	SCORE [Self]	SCORE [HOD]	SCORE [Committee]

8.	No. of PhD Produced [10 marks per candidate]	SCORE [Self]	SCORE [HOD]	SCORE [Committee]

9.	No. of ME/M.Tech Produced [3 marks per candidate]	SCORE [Self]	SCORE [HOD]	SCORE [Committee]
		03		

+ 8 marks ++ 15 marks +++ 30 marks

+++++Upto3lakhs =5 marks
 3 to 5 lakhs = 8 marks
 5 to 10 lakhs = 12 marks
 10 to 15 lakhs = 15 marks
 >15 lakhs = 20 marks

Faculty Performance Appraisal Report

Indicator: IV

Minimum Score:15

ACADEMIC LEADERSHIP/ADMINISTRATION AND OTHER ACTIVITIES

Sl. No.	Programmes	SCORE	SCORE [HOD]	SCORE [Committee]
1.	Workshop/Seminar/Conference/Symposium conducted as main Coordinator [10marks/programme subject to minimum participants]			
	Workshop/Seminar/Conference/Symposium conducted as Co-Coordinator [7 marks/programme subject to minimum participants]			

Sl. No.	Programmes	SCORE	SCORE [HOD]	SCORE [Committee]
	Workshop/Seminar/Conference/Symposium conducted as Member [4 marks/programme subject to minimum participants]			
2.	Workshop/Seminar/Conference/Symposium participated at National level [IIT/IISc level institution] [5 marks/programme]			
	Workshop/Seminar/Conference/Symposium participated at National level [other institution] [2 marks/programme]			
	Workshop/Seminar/Conference/Symposium participated at International level [10 marks/programme]			
3.	Chairman/Co-chairman of Committee/Warden/HOD/Dean/FIA [10 marks/Assignment subject to having two meetings in a semester] 1. Student Welfare Committee 2. Digital Initiative 3. Internet, Intranet, Website			
4.	Member of Committee [2 marks/Committee] 1. Faculty Development Committee 2. Purchase committee 3. Staff welfare and grievance redressal committee 4. Campus planning and development committee 5. Officer incharge for liasioning other states 6. Samarth campus and green technology 7. Institute Day			
5.	Additional STC conducted [7 marks per STC]			
6.	Finishing School conducted [8 marks per batch of 5-10 students; 10 marks per batch of 11~20 students and 15 marks perbatch of >21 students]			

Faculty Performance Appraisal Report

Sl. No.	Programmes	SCORE	SCORE [HOD]	SCORE [Committee]
	Coordinated student training programme (CP 78) in collaboration with Start Up. 9 students			
7.	Industry Linkages/Laboratory developed [10 marks per Lab]			
8.	Collaborative Activities (with other Organizations) [8 marks per activity] Coordinated TECHSPARDHA2k18 held on 5 th -7 th September, 2018 with the collaboration of IBM, CL Educate Ltd, New Delhi			
9.	Innovation, if any, if accepted [20 marks per innovation]			
10.	Extension activities (as assigned) [5 marks per activity] Coordinator for MOOCs Coordinator for NRC Coordinated Documentary film for Haryana State Board of Technical Education Organized Cultural Programme on 7th September			

*Minimum participants in Seminar/Conference/Symposium = 80. For Workshop, it is 30.

1. If the score is **100**, then the Grading shall be **Good**
2. If the score is **> 100 <125**, then the Grading shall be **Very Good** subject to(II) + (III) + (IV) should not be less than 60.
3. If the score is **> 125**, then the Grading shall be **Outstanding** subject to(II) + (III) + (IV) is more than 70.
4. If the score is **less than 100**, then the Grading shall be **Poor**.
5. Grace can be awarded by the Director for those who are performing exceptionally good and discharging the assigned responsibilities as required by the system.

List of Current Faculty

Director: Dr. SS Pattnaik

Name	Department
Dr. BS Pabla	Professor Mechanical Engg. Department
Dr. SK Dhameja	Professor & Head, EDIC
Dr. S S Banwait	Dean, (Academics, Research & Development), Professor Mechanical Engineering and CVO
Dr. AB Gupta	Dean (Industrial Coordination, Consultancy and Extension Services) and Professor Curriculum Development Centre
Dr. Sanjay Sharma	Professor & Head Civil Engg and Incharge Campus Planning & Development Division /Cell
Dr. Hemant Sood	Professor Civil Engineering Department
Dr. Sunil Dutt	Professor & Head, Edu. & Edul. Mgt.
Dr. BC Choudhary	Professor, Applied Science Department
Dr. Rakesh Wats	Professor & Head Media Engineering
Dr. Maitreyee Dutta	Professor & Head, Computer Science and Engineering Department
Dr. Sukhdeep Singh Dhani	Professor & Head Mechanical Engineering Department
Dr. Upendra Nath Roy	Professor Rural Development Department
Dr. C Ramakrishna	Associate Dean and Professor, Computer Science and Engineering Department
Dr. (Mrs). Poonam Syal	Professor & Head, Rural Development Department
Dr. Lini Mathew	Professor & Head, Electrical Engineering Department
Dr. Rajesh Mehra	Professor & Head, Curriculum Development Centre
Dr. Amod Kumar	Professor, Electronics & Communication Engineering Department
Dr. Srinivasa KG	Professor, Computer Science and Engineering Department, Coordinator, Academic Cell and Professor Incharge Library
Dr. Sandeep Singh Gill	Professor & Head, Electronics & Communication Engineering Department & Professor, Computer Science and Engineering Department
Dr. Piush Verma	Professor, Electrical Engineering Department (against ETV Lien vacancy)
Dr. Rupinder Singh	Professor, Mechanical Engineering Department
Dr. Pankaj Sharma	Professor & Head, Applied Science Department
Dr. Niraj Bala	Professor, EDIC
Shri AK Duggal	Associate Professor, Civil Engineering Department
Shri PK Singla	Associate Professor, Curriculum Development Centre & Faculty Incharge (Administration)
Dr. Suresh Kumar Gupta	Associate Professor, Curriculum Development Centre
Mrs Rama Chhabra	Associate Professor, Education and Educational Management
Shri Vinod Kumar	Associate Professor, Civil Engineering Department

List of Current Faculty (contd..)

Name	Department
Shri Sunil D Jassal	Associate Professor, Mechanical Engineering Department
Dr. Ritula Thakur	Associate Professor, Electrical Engineering Department
Dr. Balwinder Singh	Associate Professor, Electronics & Communication Engineering Department
Dr. Meenakshi Sood	Associate Professor, Curriculum Development Centre
Dr. Ashok Kumar	Associate Professor, Applied Science Department
Dr. Balwinder Raj	Associate Professor, Electronics & Communication Engineering
Dr. Hemant Kumar Vinayak	Associate Professor, EDIC Department
Dr. Harsh Vardhan Samalia	Associate Professor, EDIC Department
Mrs. Shano Solanki	Assistant Professor, Computer Science and Engineering Department
Shri Amit Doegar	Assistant Professor, Computer Science and Engineering Department
Dr. P S Rao	Assistant Professor, Mechanical Engineering Department
Dr. (Mrs) Kanika Sharma	Assistant Professor, Electronics & Communication Engineering Department
Dr. Amit Goyal	Assistant Professor, Civil Engineering Department
Mrs. Garima Saini	Assistant Professor, Electronics & Communication Engineering Department
Dr. Shimi SL	Assistant Professor, Electrical Engineering Department
Dr. Mala Kalra	Assistant Professor, Computer Science and Engineering Department
Mrs. Himmi Gupta	Assistant Professor, Civil Engineering Department
Shri Amardev Singh	Assistant Professor, EDIC Department
Mrs. Amandeep Kaur	Assistant Professor, Education & Educational Management Department
Dr. Rakesh Kumar	Assistant Professor, Computer Science and Engineering Department (Lien to Central University, Mahendragarh) from 19.2.2020
Dr. K.C Lachhwani	Assistant Professor, Applied Science Department

Visiting Professor

Prof. A.L. Das	INAE Visiting Professor
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FACULTY PROFILE



Dr. S S Pattnaik

Director

director@nittrchd.ac.in

0172-2792369, 5061563

Areas of Specialization

- Soft Computing
- Multimedia
- Antenna & Microwave
- RF & Bio-medical

Areas of Specialization

- Engineering Design
- Production Management
- Manufacturing Technology

Dr. S S Banwait

***Dean, Academics and
Research & Development***

ssb@nittrchd.ac.in

0172-2759552



Dr. A B Gupta

***Dean, Extension Services
and Consultancy***

headcdc@gmail.com

0172-2759541

Areas of Specialization

- Curriculum Development
- Curriculum Implementation
- Manufacturing Technology

APPLIED SCIENCE DEPARTMENT



Dr. Pankaj Sharma (PS)

Professor

pankaj@nitttrchd.ac.in

9816852533

Areas of Specialization

- Thin-film Optics
- Amorphous Semiconductors
- Ferrites
- Nanomaterials

Areas of Specialization

- Fiber Optics
- Radiation Physics
- Nanotechnology
- Laser Technology

Dr. B. C. Choudhary (BCC)

Professor

bakhshish@yahoo.com

0172-2759556



Dr. Ashok Kumar (AK)

Associate Professor

ashokku@nitttrchd.ac.in

0172-2759772

Areas of Specialization

- Physics of nanomaterials and thin films
- Nanotechnology and energy based devices
- Energy harvesting and storage

Areas of Specialization

- Operation Research
- Mathematical Programming

Dr. K C Lachhwani (KCL)

Assistant Professor

kailashclachhwani@yahoo.com

0172-2759771



CIVIL ENGINEERING DEPARTMENT



Dr. Sanjay Kumar Sharma (SKS)

Professor

sanjaysharmachd@gmail.com

0172-2759514

Areas of Specialization

- Hydraulics & Irrigation
- Environmental Engineering
- Building Maintenance
- Repair & Rehabilitation

Areas of Specialization

- Concrete Technology
- Pavement Design
- Transportation Engineering
- Structural Engineering

Dr. Hemant Sood (HS)

Professor

sood_hemant@yahoo.co.in

0172-2759565



Er. Ajay Kumar Duggal (AKD)

Associate Professor

duggal_ajay@rediffmail.com

0172-2759564

Areas of Specialization

- Transportation Engineering
- Foundation Engineering
- Highway Engineering

Areas of Specialization

- Geo-technical Engineering
- Construction Management
- Soil Mechanics
- Computer Programming

Er. Vinod Kumar Sonthwal (VKS)

Associate Professor

vksmail1970@rediffmail.com

0172-2759646





Er. Himmi Gupta (HG)

Assistant Professor

himmigupta.nitttr@gmail.com

0172-2759743

Areas of Specialization

- Structural Engineering
- Bridge Engineering
- Project Management

Areas of Specialization

- Structure Dynamics
- Masonry Structure
- Low Cost Housing

Dr. Amit Goyal (AG)

Assistant Professor

amitgoyalmit23@gmail.com

0172-2759728



CURRICULUM DEVELOPMENT DEPARTMENT



Dr. Rajesh Mehra (RM)

Professor

rajeshmehra@nitttrchd.ac.in

0172-2759534

Areas of Specialization

- VLSI Design
- Advanced Digital Signal Processing
- Embedded Design

Areas of Specialization

- Curriculum Development
- Curriculum Implementation
- Manufacturing Technology

Dr. A B Gupta (ABG)

Professor

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**Dr. Suresh Kumar Gupta
(SKG)**

Associate Professor

skgupta38@yahoo.com

0172-2759653

Areas of Specialization

- Curriculum Development
- Civil Engineering

Areas of Specialization

- ANN
- Antenna
- Multirate & Adaptive Signal Processing
- Soft Computing

Dr. Meenakshi Sood (MS)

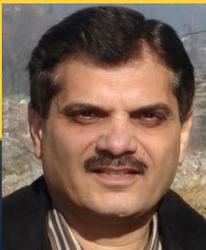
Associate Professor

meenakshi@nittrchd.ac.in

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EDUCATION AND EDUCATIONAL MANAGEMENT DEPARTMENT



Dr. Sunil Dutt (SD)

Professor

sunildut2002@yahoo.co.in

0172-2759594

Areas of Specialization

- Educational Technology
- Research Methodology & Educational Management

Areas of Specialization

- Curriculum Design
- Curriculum Evaluation
- Communication Skills

Er. Parmod Kumar Singla (PKS)

Associate Professor and Faculty In-charge (Admn.)

pkSingla@gmail.com

0172-2759567





Er. Rama Chhabra (RC)

Associate Professor

chhabra_r@hotmail.com

0172-2759627

Areas of Specialization

- Chemical Engineering
- Information Management



Er. Amandeep Kaur Sandhu (AS)

Assistant Professor

amandeep@nitttrchd.ac.in

0172-2759776

Areas of Specialization

- Educational Management
- Educational Technology

ELECTRICAL ENGINEERING DEPARTMENT



Dr. Lini Mathew (LM)

Professor

lenimathew@yahoo.com

0172-2759686

Areas of Specialization

- Digital Signal Processing
- ANN and Fuzzy Logic
- Virtual Instrumentation

Areas of Specialization

- Diagnostics Study of Power Transformers, Designing of Mini-Micro Hydro Power Generation,
- Energy Management

Dr. Piush Verma (PV)

Professor (Joint Faculty)

piush@nitttrchd.ac.in

7888713006





Dr. Poonam Syal (PS)

Professor (Joint Faculty)

poonamsyal@nittrchd.ac.in

0172-2759568

Areas of Specialization

- Energy Management
- Instrumentation for Env't. Engg.
- Assistive Technologies
- Research Methodology

Areas of Specialization

- Power System Analysis
- Embedded System
- Big Data Analysis for Smart Grid

Dr. Ritula Thakur (RT)

Associate Professor

ritula.thakur@gmail.com

0172-2759548



Dr. Shimi S.L (SSL)

Assistant Professor

shimi.reji@gmail.com

0172-2759736

Areas of Specialization

- Power Electronics & Drives
- Digital Control, FACTS, Artificial Intelligence & Optimization
- LABVIEW & its hardware interface

ELECTRONICS AND COMMUNICATION ENGINEERING DEPARTMENT

Areas of Specialization

- VLSI CAD
- Soft Computing Techniques
- Engineering Management

Dr. Sandeep Singh Gill (SSG)

Professor

ssg@nittrchd.ac.in

0172-2759648





Dr. Amod Kumar (AMK)

Professor

amod@csio.res.in

0172-2759638

Areas of Specialization

- Artificial Intelligence
- Biomedical Engineering

Areas of Specialization

- VLSI Design
- Advanced Digital Signal Processing
- Embedded Design

Dr. Rajesh Mehra (RM)

Professor (Joint Faculty)

rajeshmehra@nitttrchd.ac.in

0172-2759534



Dr. S S Pattnaik

Professor (Joint Faculty)

director@nitttrchd.ac.in

0172-2792369, 5061563

Areas of Specialization

- Soft Computing
- Multimedia
- Antenna & Microwave
- RF & Bio-medical

Areas of Specialization

- Nanoelectronic Devices and Circuits,
- Nanotechnology and energy based devices
- VLSI Design
- VLSI & Embedded System Design

Dr. Balwinder Raj (BR)

Associate Professor

piush@nitttrchd.ac.in

7888713006





**Dr. Balwinder Singh Dhaliwal
(BSD)**

Associate Professor

balwindersdhalial@nitttrchd.ac.in

0172-

Areas of Specialization

- Antenna (Fractal, MIMO)
- ANN
- Digital Signal Processing
- Soft Computing

Areas of Specialization

- ANN
- Antenna
- Multirate & Adaptive Signal Processing
- Soft Computing

Dr. Meenakshi Sood (MS)

Associate Professor (Joint Faculty)

meenakshi@nitttrchd.ac.in

0172-2759586



Dr. Kanika Sharma (KS)

Assistant Professor

kanikasharma80@yahoo.com

0172-2759629

Areas of Specialization

- Embedded System Design
- Digital System Design
- Wireless Sensor Network



Areas of Specialization

- Advanced Digital Communication
- Wireless & Mobile Communication
- Antenna

Er. Garima Saini (GS)

Assistant Professor

garima@nitttrchd.ac.in

0172-2759665





Dr. Suresh Kumar Dhameja (SKD)

Professor

skdhameja@yahoo.com

0172-2759612

Areas of Specialization

- Entrepreneurship Development
- Industry Institute Interaction
- Technical and Vocational Education and Training

Areas of Specialization

- Entrepreneurship
- Entrepreneurship Development
- Patenting
- Business Startup
- Skill Promotion

Dr. Niraj Bala (NB)

Professor

nirajbala@nitttrchd.ac.in

0172-2759577



**Dr. Upendra Nath Roy
(UNR)**

Professor (Joint Faculty)

unroy2000@yahoo.com

0172-2759539

Areas of Specialization

- Watershed Management
- Rural Sanitation
- Climate Change & Disaster Mgmt.
- Organic Farming



Areas of Specialization

- VLSI CAD
- Soft Computing Techniques
- Engineering Management

Dr. Sandeep Singh Gill (SSG)

Professor (Joint Faculty)

ssg@nitttrchd.ac.in

0172-2759648



Areas of Specialization

- Strategic Management, Informal Competition
- Digital Transformation of Organizations
- Behavioral Aspects of Information Systems

Dr. Harsh Vardhan Samalia
(HVS)

Associate Professor

harsh.nittr@gmail.com

0172-2759673



Dr. Hemant Kumar Vinayak
(HKV)

Associate Professor

hemant.vinayak@nittrchd.ac.in

0172-2759799

Areas of Specialization

- Entrepreneurship Development
- Integrated Rural Development
- Retail Business Management

Areas of Specialization

- Entrepreneurship Development
- Intellectual Property Rights
- Technology Adoption and Management

Er. Amardev Singh (ADS)

Assistant Professor

amardev.nittrchd@yahoo.com

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COMPUTER SCIENCE AND ENGINEERING DEPARTMENT



Dr. Maitreyee Dutta (MD)

Professor

d_maitreyee@yahoo.co.in

0172-2759693

Areas of Specialization

- Digital Signal & Image Processing
- Data Warehousing & Data Mining
- Advanced Computer Architecture
- Software Testing & Quality Mgt.



**Dr. Rama Krishna Challa
(CRK)**

Professor

rkc_97@yahoo.com

0172-2759670

Areas of Specialization

- Wireless Communication & Networks
- Cryptography & Cyber Security
- Distributed Computing

Areas of Specialization

- High Performance Computing
- Cloud Computing
- Data Science
- IoT
- Digital Pedagogy

Dr. Srinivasa KG (SKG)

Professor

kgsrinivasa@gmail.com

0172-2759695



Dr. Sandeep Singh Gill (SSG)

Professor

ssg@nitttrchd.ac.in

0172-2759648

Areas of Specialization

- VLSI CAD
- Soft Computing Techniques
- Engineering Management

Areas of Specialization

- Algorithm Analysis & Design
- Multimedia System Design
- Web Based Training
- Recommender Systems

Er. Shano Solanki (SS)

Assistant Professor

s_solanki_2000@yahoo.com

0172-2759696





Er. Amit Doegar (AD)

Assistant Professor

amit@nittrchd.ac.in

0172-2759679

Areas of Specialization

- Networking
- Web Technologies
- Open Source Technologies
- Image Processing, Data Mining

Areas of Specialization

- Cloud Computing
- Information Retrieval
- Swarm Intelligence

Dr. Mala Kalra (MK)

Assistant Professor

malakalra@nittrchd.ac.in

0172-2759737



Dr. Rakesh Kumar (RK)

Assistant Professor

*(on lien as Associate Professor at CUH,
Mahendragarh)*

raakeshdhiman@gmail.com

0172-2759787

Areas of Specialization

- Wireless Sensor Networks
- Adhoc Networks
- Cloud Computing



MECHANICAL ENGINEERING DEPARTMENT

**Dr. Sukhdeep Singh Dhami
(SSD)**

Professor

ssdhami@nittrchd.ac.in

0172-2759659

Areas of Specialization

- Mechatronics
- Automation & Control System
- Modeling & Simulation





Dr. B S Pabla (BSP)

Professor

bsp@nitttrchd.ac.in

0172-2759525

Areas of Specialization

- Manufacturing Technology
- CAD/CAM & CNC Machines
- Optimization Techniques

Areas of Specialization

- Engineering Design
- Production Management
- Manufacturing Technology

Dr. S S Banwait (SSB)

Professor

ssb@nitttrchd.ac.in

0172-2759552



Areas of Specialization

- Non-traditional machining
- Metal casting
- Rapid Prototyping/manufacturing
- Welding Technology
- Maintenance Engineering

Dr. Rupinder Singh (RS)

Professor

rupindersingh@nitttrchd.ac.in

9872257575



Areas of Specialization

- Thermal Engineering

Er. Sunil D Jassal (SJ)

Associate Professor

jassalsd@nitttrchd.ac.in

0172-2759655



Areas of Specialization

- CAD/CAM
- Manufacturing Technology

Dr. P Sudhakar Rao (PSR)

Assistant Professor

psrao.iitr@gmail.com

0172-2759617



MEDIA ENGINEERING DEPARTMENT



Dr. Rakesh Wats (RKW)

Professor

rakeshwats@gmail.com

0172-2795513

Areas of Specialization

- Quality Mgt. & General Mgt.
- Civil Engineering (Irrigation & Hydraulics)

Areas of Specialization

- Soft Computing
- Multimedia
- Antenna & Microwave
- RF & Bio-medical

Dr. S S Pattnaik (SSP)

Professor

director@nitttrchd.ac.in

0172-2792369, 5061563



Dr. Piush Verma (PV)

Professor

(Against Lien Vacancy)

piush@nitttrchd.ac.in

7888713006

Areas of Specialization

- Diagnostics Study of Power Transformers, Designing of Mini-Micro Hydro Power Generation,
- Energy Management

RURAL DEVELOPMENT DEPARTMENT

Areas of Specialization

- Energy Management
- Instrumentation for Env't. Engg.
- Assistive Technologies
- Research Methodology

Dr. Poonam Syal (PS)

Professor

poonamsyal@nittrchd.ac.in

0172-2759568



**Dr. Upendra Nath Roy
(UNR)**

Professor

unroy2000@yahoo.com

0172-2759539

Areas of Specialization

- Watershed Management
- Rural Sanitation
- Climate Change & Disaster Mgmt.
- Organic Farming

Areas of Specialization

- Structure Dynamics
- Masonry Structure
- Low Cost Housing

Dr. Amit Goyal (AG)

Assistant Professor (Joint Faculty)

amitgoyalamit23@gmail.com

0172-2759728



**Dr. Hemant Kumar Vinayak
(HKV)**

Associate Professor (Joint Faculty)

hemant.vinayak@nittrchd.ac.in

0172-2759799

Areas of Specialization

- Entrepreneurship Development
- Integrated Rural Development
- Retail Business Management

Regularly Engaged Experts

Name of Expert	Organization	Area of Expertise
Dr. Suresh Kumar Sharma	Professor, Department of Statistics, PU, Chandigarh	Statistics (SPSS)
Dr. Sanjeev Kumar Sharma	Professor, UIAMS, PU, Chandigarh	Educational Management
Mrs. Suditi Jindal	Philyra Training & Consultancy, SCO 23, Sector 33D, Chandigarh	Communication Skills
Dr. Archana Singh	Professor, Department of Communication, Panjab University, Chandigarh	Educational Technology and Communication Skills
Dr. Sushil Kumar Kansal	Professor, Dr. SS Bhatnagar ICET, Panjab University, Chandigarh	Research Methodology
Dr. HS Chhema	Cheema Boilers, Ropar	Industrial exposure to faculty
Mr. Debashish Sen	RSO Inter University Accelerator Centre, New Delhi	Particles Accelerators and radiations
Dr. J.K. Goswamy	PU, Chandigarh	Nuclear Detectors
Dr. Sanjeev Chaddha	Mahatma Gandhi State Institute of Public Administration, Sector 26, Chandigarh	
Dr. Akhil Jhingan	IUAC, New Delhi	Accelerators based Nuclear Techniques
Dr. Sarika Prasher	PGIMER, Chandigarh	Radiation monitoring and safety measures
Dr. Arun S. Oinam	PGIMER, Chandigarh	Radiotherapy
Dr. Rajeev Kumar Sharma	PAU, Ludhiana, Punjab	Nuclear Radiations in Agriculture
Dr. Raj Kumar	CSIO, Chandigarh	Holography
Dr. Dibakar Roy Chowdhury	Mohindra University, Hyderabad	Ultrafast lasers and applications
Dr. D.P. Ghai	DRDO, New Delhi	Lasers for aerospace & defence applications
Dr. JK Chhabra	CSIO, Chandigarh	Lasers & Fiber optics
Dr. Umesh K Tiwari	CSIO, Chandigarh	FBGs & Sensors
Dr. Baljeet Kaur	GNDEC, Ludhiana	PONs
Dr. T. Srinivas	IISc, Bangalore	Quantum optical communication

Experts (contd...)

Dr. M.L. Singh	GNDU, Amritsar	FSO & Li-Fi
Dr. SK Tripathi	PU, Chandigarh	Material characterization techniques
Dr. K. Dharamvir	PU, Chandigarh	Carbon based nanostructures
Dr. G.R. Chaudhary	PU, Chandigarh	Synthesis of NMs
Dr. Sanjeev Kumar	PEC, Chandigarh	Nanomagnetism & Ferroics materials
Dr. Kamalakannan Kailasam	INST, Chandigarh	Green Energy Environment
Dr. Bikash Medhi	PGIMER, Chandigarh	Nanomedicines & Drug Delivery
Dr. Gaurav Verma	PU, Chandigarh	Nano- Polymers & Composites
Dr. Ramesh K Sharma	PU, Chandigarh	XRD, SEM & TEM
Er. Anil Sharma	Impulse Technology	DFT Simulations, NanoDcal
Prof. PN Agarwal	IIT Roorkee	Real and Complex analysis, Numerical Analysis, Differential calculus etc.
Prof. Vijay Gupta	NSUT, Delhi	Differential Calculus, Approximation theory etc.
Prof. Vinay Kanwar	UIET, Panjab University, Chandigarh	Numerical Analysis
Prof. Vanita Verma	Panjab University, Chandigarh	Operations Research, Transportation problems etc.
Dr. Kalpana Dahiya	UIET, Panjab University, Chandigarh	Operations Research, Transportation problems etc.
Dr. Millie Pant	IIT Roorkee Saharanpur Campus	Sot computing techniques, Optimization etc.
Dr. Sanjay Jain	MDSU, Ajmer	Mathematical Programming problems, OR etc.
Dr. C. R. Mariappan	NIT Kurukshetra	Energy Materials, Nanotechnology
Dr. Tharamani C N	IIT Ropar	Energy Materials, batteries, nanotechnology

Experts (contd...)

Dr. D. Sahdev	IIT Kanpur, & Director, Quazar Tech., New Delhi	Instrumentation in nanotechnology
Dr. Satinder Kumar Sharma	IIT Mandi	Nanoscale electronics
Dr. Yashveer Singh	IIT Ropar	Nanomaterials for biomedical applications
Dr. Anirban Choudhary	IIT Patna	Large scale nanomaterials synthesis
Dr C N Kumar	PU, Chandigarh	Nonlinear Phenomena
Dr. Ashavani Kumar	NIT Kurukshetra	Energy Materials, Nanotechnology
Dr. Sanjeev Kumar	PEC, Chandigarh	Nanomagnetism & Ferroics materials
Dr. Debaprasad Mandal	IIT Ropar	Inorganic and Organometallic Chemistry
Dr Anup Thakur	Punjabi University Patiala	Thin films and optoelectronic materials
Dr Abhinav Pratap Singh	NIT Jalandhar	Thin films, magnetic semiconductors, correlated electron materials
Ajay Godara	Ennovate Technologies, Chandigarh	Internet of Things (IOT)
Shri. MM Malhotra Ex Principal	NITTTR, Chandigarh	Curriculum development
Shri. VP Puri Ex Professor	NITTTR, Chandigarh	Resource Management
Shri. YK Anand Ex Professor	NITTTR, Chandigarh	Curriculum Development
Shri. Narender Singh Principal	Indo -Swiss Training Centre, Chandigarh	Skill Development
Dr. LN Mittal Ex Professor	NITTTR, Chandigarh	Curriculum Development
Sonia Ahuja	Practicing Architect, Building Aura, Gurugram	Architectural
Pankaj Jain	Practicing Architech Jain and Associates, Gurugram	Architectural
Neha Gupta	Co-founder Beyond Design	Interior Design and Architect
Abhinav Chugh	-	Garment Fabrication Technology
Bharat Virmani	-	Garment Fabrication Technology

Experts (contd...)

Nitin Jain	-	ECE
Avdhesh Vaid	-	ECE
Mukesh Bansal	Sr. Director-Altran	CSE
Puneet Dahiya	Founder-CEO Trexova Trips LLP	CSE
Pooja Solanki	-	Fashion Design
Ashima Gogia	-	Fashion Design
DS Khatri	Director Vembsys Technovation, Gurgram	Automobile
Sukhbir Singh Batra	Director	Tool & die making
Jaspreet Singh Karamsar	-	Tool & Die making
Abhay Kumar Bhawalkar	General Manager, Piramal Glass P.Ltd. ONGS Road, Kosmba Gujrat	Mechanical Engg.
Ajay Raj	CEO, A25 consulting Engineers, C-64, Kalkaji, New Delhi	Mechanical Engg.
Dr. Sumit Verma	Concept Education Trust, Dadri	Fire Safety Management and Computer Application
Jasmeet Singh	Ambition Education Trust, Lucknow	Fire Safety Management
Purnima Sharma	National Training Manager Absolute Beauty Concepts P.Ltd.	Cosmetology & Health
Saru Singh	MBBS DALM(Germony)	Cosmetology & Health
Sanjay Aggarwal	L&T	Electrical Engineering
Rachna Verma	-	Electrical Engineering
Garima	Industry Expert	Applied Art /Art for Drawing Teacher
Manish Kumar	Industry Expert	Applied Art /Art for Drawing Teacher
Dr. H. K. Sardana Dy. Director	CSIO, Sector 30, Chandigarh	
Prof. V. Rihani, HOD, E&CE	Punjab Engineering College (Deemed University) Sector 12, Chandigarh	
Prof. Sanjeev Sofat	Punjab Engineering College (Deemed University) Sector 12, Chandigarh	
Prof. R.S. Kaler	Thapar University, Patiala (Pb)	
Prof. Inderdeep Kaur Aulakh	Asstt. Professor, UIET, Sector 25, Chandigarh.	
Prof. Arvind Kumar	Head, ECE Department, UIET, Sector 25, Chandigarh.	

Experts (contd...)

Prof. HPS Kang	Punjab University , Sector-14, Chandigarh	
Dr.Tankeshwar,	Deptt. of Physics Panjab University, Chandigarh	
Dr. Sukhwinder Singh, Head, Computer Sc. Deptt.	Head, Computer Sc. Deptt. U.I.E.T., Panjab University, Sector-25, Chandigarh	
Dr. A.K. Bhatti, Deptt. of Physics	Panjab University, Chandigarh -160 014	
Dr. Amit Chaudhary, Assistant Prof., ECE Deptt.	U.I.E.T., Panjab University Chandigarh	
Dr. Nirmal Singh, Deptt. of Physics	Panjab University, Chandigarh	
Dr. J.S.Shahi, Deptt. of Physics	Panjab University, Chandigarh -160 014	
Prof. R.K. Singla, Department of Computer Science,	Panjab University, Sector-14, Chandigarh	
Dr. Dilbag Singh, Assistant Professor	Dr. B.R. Ambedkar Deptt. of Instrumentation & Control Engg., National Instt. of Tech., G.T. Road –bypass, Jalandhar-144 011 (Pb)	
Dr. R.K. Sarin, Prof., & Head	Eltx. & Commn. Engg., Dr. B.R. Ambedkar National Instt. of Tech., G.T. Road –bypass, Jalandhar-144 011 (Pb)	
Dr. Kulbir Singh, Associate Professor, ECE Deptt.	Thapar University,Patiala (Pb)	
Dr. Arun Khosla, Assistant Prof., ECE Deptt.	Dr. B.R. Ambedkar National Instt. of Tech., G.T. Road –bypass, Jalandhar-144 011 (Pb)	
Dr. Paramjit Singh, Professor	Department of Chemical Engineering, Panjab University, Chandigarh	

Experts (contd...)

Dr.(Mrs.) Savita Gupta	C.S.E. Deptt., U.I.E.T., Panjab University, Chandigarh	
Dr. I.B.S. Passi,	Deptt. of Maths, Panjabi University, Chandigarh	
Dr. R.K. Khanna,	ECE Department, Thapar University, Patiala (Pb.)	
Prof. Renu Vig, Professor	University Institute of Engg. and Technology Panjab University, Chandigarh	
Prof. Vinod Kapoor	NIT, Hamirpur (H.P.)	
Prof. Neena Gupta Professor	Panjab Engineering College, Sector-12, Chandigarh	
Dr. V.K. Rattan	Deptt. of Chemical Engineering, P.U., Chandigarh	
Prof. R.K. Wanchoo	Deptt. of Chemical Engineering, P.U., Chandigarh	
Prof. C.S. Aulakh	Deptt. of Physics, P.U., Chandigarh	
Dr. M.M. Gupta	Deptt. of Physics Panjab University, Chandigarh	
Dr. Barjesh Rawat	IIT, Ropar (Punjab)	
Dr. Brijesh Khumbani	IIT, Ropar (Punjab)	
Dr. Sahambi	IIT, Ropar (Punjab)	
Dr. Barjesh Kaushik	IIT, Roorkee, Uttarakhand	
Dr. Jyoti Kedia	PEC, Chandigarh	
Dr. Rita Mahajan	PEC, Chandigarh	
Dr. Anil Kumar Rose	CCET, Chandigarh	
Dr. Bhaskar Gupta	CCET, Chandigarh	
Dr. K.G. Sharma	CCET, Chandigarh	
Dr. Ashwini Sharma	IIT, Ropar (Punjab)	
Dr. Brahmjit Singh	NIT, Kurukshetra (Haryana)	
Dr. Satish Kumar	CSIR–CSIO, Sector-30 C, Chandigarh	
Dr. Rajender	NIT, Kurukshetra (Haryana)	
Dr. Arvind Kumar	NIT, Kurukshetra (Haryana)	
Dr. Aparna Akula	CSIR–CSIO, Sector-30 C, Chandigarh	
Dr. Rajesh K	Thapar University, Patiala (Pb)	
Dr. Sanjeev Kumar	CSIR–CSIO, Sector-30 C, Chandigarh	
Dr. Baban Kumar	CSIR–CSIO, Sector-30 C, Chandigarh	
Dr. Baljit Singh	CSIR–CSIO, Sector-30 C, Chandigarh	
Dr. Amit Laddi	CSIR–CSIO, Sector-30 C, Chandigarh	

Experts (contd...)

Dr. Amitava Das	CSIR–CSIO, Sector-30 C, Chandigarh	
Er. Gurmeet Sharma	IoT Labs	
Er. Devender	Touch Techno	
Dr. Ravibabu	IIT Ropar	Image Processing
Dr. R K Sunkaria	NIT, Jalandhar	Denoising and Segmentation of MRI Brain images
Prof. Bhupinder Verma	Dean, LPU	Industrial Electronics
Dr. Shashi S Jha	IIT Ropar	Artificial Intelligence and Machine Learning
Dr. Rajeev K Tripathi	NIT Delhi	Different Initialization Techniques for K-Means Algorithms
Dr. Vinit	IIT Jammu	Machine/Deep Learning
Dr. C C Reddy	IIT Ropar	High Voltages, AC, DC, Switching and Lightning Impulse Voltages
Dr. Ashish Raman	NIT, Jalandhar	PLL Design
Dr. Ujjwal Kalla	MANIT, Bhopal	Power Electronics, Power Quality
Dr. Ravi Teja	IIT, Ropar	Electric Vehicles
Dr. Ajay Singh	IIT Jammu	Cognitive Radio Networks
Dr. Ashwani Aggrawal	IIT, Delhi	Nanomaterials for Textile
Dr. Rajendra Singh	IIT Delhi	GaN based Materials and Devices, Wide Band Gap Semiconductor
Dr. P Gopinath	IIT Roorkee	Nanomaterials for Biomedical
Dr. B S Kaith	NIT Jalandhar	Nano-gel Compositions
Dr. Manjit Jassal	IIT Delhi	Nanotechnology for Functional Textile
Dr. Mandeep Singh	TIET Patiala	Instrumentation & Control
Dr. Babankumar	CSIR-CSIO, Chandigarh	Embedded Systems
Dr. Sanjeev Kumar	CSIR-CSIO, Chandigarh	Biomedical Instrumentation

Experts (contd...)

Dr. Y.P.Verma	UIET, Chandigarh	Power Systems
Dr. Jagdish Kumar	PEC, Chandigarh	Power Electronics
Dr. Anil Rose	CCET, Chandigarh	Embedded Systems
Dr. Arshdeep Bahga	Founder and Director, Cloudemy Tech Labs, Chandigarh	Cloud Computing, Internet of Things
Mr. Mani Gupta	Sr. Consultant, U-Net Solutions, Moga	Networking, Linux, Cloud Computing
Dr. Gaurav Kumar	Director, Magma Research & Consultancy Pvt. Ltd., Ambala	Machine Learning, Digital Marketing, Python Programming, R Programming
Mr. Neeraj Garg	Firminiq Systems Pvt. Ltd. Chandigarh	NoSQL Databases, Big Data Analytics
Mr. Ravikant Tyagi	Brain Mentors Pvt. Ltd., Delhi	Machine Learning, Python Programming, Web Development
Mr. Kunal Nandwani	uTrade Solutions, Mohali	Blockchain Technology
Mr. Tariq Deep Singh	Tech Mahindra	Internet of Things
Dr. Mani Madhukar	IBM Gurgaon	Blockchain Technology, Cloud Computing
Er. Sunil Bhutani	MD, EME Technologies, Mohali	Digital Marketing, NoSQL Databases
Dr. Sarbjeet Singh	Professor, UIET, PU, Chandigarh	Machine Learning, Cloud Computing,
Dr. Naveen Aggarwal	Professor, UIET, Chandigarh	Machine Learning
Dr. Sujata Pal	Assistant Professor, IIT, Ropar	Internet of Things
Dr. Sarwan Singh	NIELIT, Chandigarh	Internet of Things
Mr. Sandeep Singhai	Sr. Scientist, CSIO, Chandigarh	Networking, Cloud Computing
Dr. Kannan Srinathan	Assistant Professor, IIIT, Hyderabad	Cyber Security
Dr. Kuldeep Kumar	Assistant Professor, NIT, Jalandhar	Software Testing
Dr. Sandeep Kumar Garg	Associate Professor, IIT, Roorkee	Software Engineering, Machine Learning
Mr. Joginder Singh	National Small Industries Corporation. Ltd, Rajpura	IOT , Machine Learning
Dr. Ahsan Chisti	Central University of Kashmir, Kashmir	IOT, Networking
Dr. Rakesh Kumar	Central University of Haryana, Haryana	Data Mining
Mr. Gautam Pal	Tripura Institute of Technology, Agartala	IOT, Image Processing

Experts (contd..)

Dr. Shivani Bali	Associate Professor, LBSIM, Delhi,	R Programming, Software reliability & optimization, Marketing Analytics
Dr. Sudarshan Iyengar	Associate Professor, IIT Ropar	Network science, Theoretical Computer Science, Cryptography, Evolutionary Psychology
Dr. Poonam Saini	Assistant Prof. PEC, Chandigarh	Big Data Analytics, Data Science, Blockchain Technology, Fault-Tolerant Distributed Computing Systems, Cloud Computing, Social Networks Analysis
Dr. Shikha Sharma	Olam Solutions Pvt. Ltd, Chandigarh	R Programming, 2D and 3D Graphics Designing and Animation
Satwinder Singh Kang	Alpha Designs and Marketing, Mohali	Graphics Designing and Animation



In this section, the Five-Year Rolling Implementation Plan to work towards the fifteen year strategic vision plan is presented. The initial five year rolling plan shall be the period for capacity building. It shall lay the foundation for progress and achievement of targets set in the 15-year strategic vision plan. The plan proposes institute-wide goals and actions that transcend the boundaries of departments and administrative functions. It aims to take advantage of its distributed strengths of different academic departments and other centers. It shall define the activities and resources requirements to implement the planned activities and stated objectives. It shall pave the way for its progress, help traverse the pathway planned crossing milestones that shall be the hallmark to measure its success.

1. Academic Plan

Based on the gap analysis, keeping in view of the strengths of the Departments the following new programmes are scheduled to start in next five years:

Proposed Programs

Sr. No.	Programme Name	Coordination Department	No. of students to be admitted	Year of Starting
Masters' Degree Programs				
1.	Physics (Specialization in Nano-photonics)	Applied Science	30	2021-22
2.	Civil Engineering (Smart Infrastructure)	Civil Engineering	18	2022-23
3.	MBA in Rural Entrepreneurship	EDIC and Rural Development	30	2022-23
4.	Computer Science and Engineering (Cyber Security)	Computer Science and Engineering	18	2022-23

Sr. No.	Programme Name	Coordination Department	No. of students to be admitted	Year of Starting
Masters' Degree Programs				
5.	MBA in Infrastructure Management	Entrepreneurship Development and Industrial Coordination	30	2022-23
6.	Engineering Education	Education and Educational Management	30	2023-24
7.	Digital Media and Social Journalism	Media engineering	30	2023-24
8.	Electrical Engineering (Smart Grid)	Electrical Engineering	18	2025-26
9.	Mechanical Engineering (Digital Manufacturing)	Mechanical Engineering	18	2025-26
10.	Disaster Management	Civil Engineering	30	2025-26
PG Diploma Programs				
11.	Construction Project Management	Civil Engineering	60	2021-22
12.	Highway Engineering	Civil Engineering	60	2021-22
13.	Networks and Cyber Security	Computer Science and Engineering	60	2021-22
14.	Adaptive Curriculum Development	Curriculum Development Centre	60	2021-22
15.	Data Analytics	Computer Science and Engineering	60	2021-22
16.	Teaching in Digital Age	Education and Educational Management	60	2021-22
17.	Institutional Assessment, Accreditation and Ranking	Mechanical Engineering	60	2021-22
18.	Additive Manufacturing	Mechanical Engineering	60	2022-23
19.	Reconfigurable Electronics	Electronics and Communication Engineering	60	2022-23
20.	Media Application for Social and Environmental Journalism	Rural Development Department & Media Engineering Department	30	2022-23

Sr. No.	Programme Name	Coordination Department	No. of students to be admitted	Year of Starting
21.	Digital Marketing	Computer Science and Engineering & Medial Engineering	60	2022-23
22.	Emerging Engineering Pedagogy with AR/VR Systems	Computer Science and Engineering & Medial Engineering	60	2022-23
23.	Digital Media and Social Journalism	Media Engineering	60	2022-23
24.	Media Resource Development	Media Engineering	60	2022-23
25.	Material Characterization	Mechanical Engineering	60	2023-24
26.	Rehabilitation Engineering	Electronics and Communication Engineering	60	2023-24
27.	Clean Technologies for Sustainable Development	Civil Engineering	60	2023-24
28.	Smart and Flexible Electronics	Electronics and Communication Engineering	60	2024-25
29.	Institute Project Planning & Management	Education and Educational Management	60	2024-25
30.	Advanced Cyber Security and Mitigation Techniques	Computer Science and Engineering	60	2025-26
31.	Energy and Sustainability	Rural Development Department	60	2025-26
32.	Institutional Resources Management	Education and Educational Management	60	2025-26
33.	Academic Management, Leadership and Governance	Entrepreneurship Development and Industrial Coordination	60	2025-26
34.	Business Economics for Higher Education Institutions	Entrepreneurship Development and Industrial Coordination	60	2025-26

Sr. No.	Programme Name	Coordination Department	No. of students to be admitted	Year of Starting
Advanced Diploma/Certificate Programs				
35.	Advanced Diploma in AI Systems	Electronics and Communication Engineering	60	2021-22
36.	Advanced Diploma in Embedded Systems and IoT	Electronics and Communication Engineering	60	2021-22
37.	Certificate Course in ICT Enabled Learning	Education and Education Management	90	2021-22
38.	Certificate course in video film making	Media Engineering	60	2021-22
39.	Advanced Certificate course in cloud applications	Computer Science and Engineering	60	2021-22
40.	Certificate course in python programming	Computer Science and Engineering	90	2021-22
41.	Advanced Diploma in Traditional Technology	Interdisciplinary	60	2022-23
42.	Advanced Certificate course in robotics	Mechanical Engineering	60	2022-23
43.	Advanced Certificate course in animation	Media Engineering	60	2022-23
44.	Advanced Diploma in Electric Vehicles	Electrical Engineering	60	2023-25
45.	Advanced Certificate course in gaming	Computer Science and Engineering	60	2024-25

2.

Student Admission Plan

Based on the gap analysis, keeping in view of the strengths of the Departments the following student admission plan is envisaged for next five years.

Admission Plan for Next Five Years

	Admission – Intake Existing	Proposed Intake 2021-23	Proposed Intake 2023-25
M.E. Programmes	151	379	529
PG Diploma	-	330	720
PhD	65	125	200

3. Research Plan

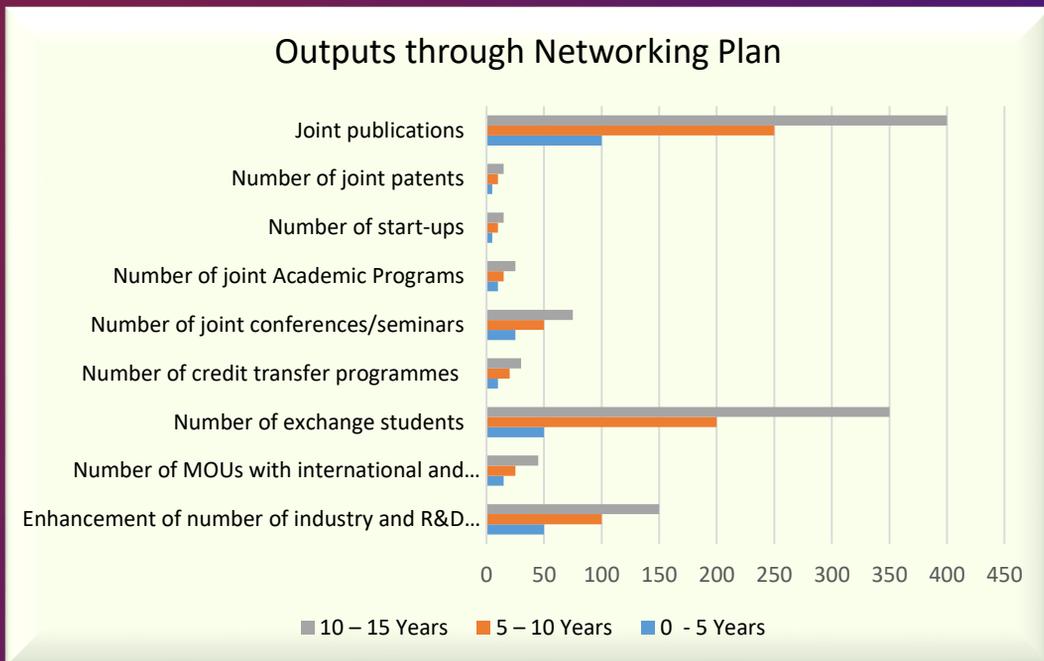
Based on the gap analysis, keeping in view of the strengths of the Departments the following research plan is envisaged for next five years. The quantified long-term perspective plan targets based on baseline data of last five years are shown in the following table.

S. No.	Parameters	Baseline data (Last Five Years)	Long Term Outlook for Next 5 Years
1	Number of Ph.Ds.	23	50
2	Number of Publications in SCI/SCIE/SSCI/A&HCI indexed journals	299	400
3	Number of research papers/review papers/book chapters in SCOPUS indexed journals/Conference Proceedings	961	1100
4	Number of Sponsored R&D Projects	6	20
5	Number of books/laboratory manuals published	62	75
6	Number of Patents/copyrights	12 (Filed) 10 (Granted)	20
7	Product Development	02	04
8	Number of conferences/workshops/seminars etc. conducted to promote the research	55	75
9	Number of Industry Sponsored Projects	03	06

4.

Networking Plan

Based on the gap analysis, keeping in view of the strengths of the Departments the following outputs are envisaged through our networking plan.



5.

Infrastructure Development Plan

To enable the Institute to start new programs, Infrastructure and other resources will be developed as the programs are added and increase in number of students. The following resources need to developed in next five years of time.

1. Chandigarh Administration, in principle, has agreed to allot 3 acres' land for second campus to NITTTR Chandigarh which will be used to develop state of art classrooms, laboratories and other facilities.
2. High end research equipment will be added to the laboratories to transform them to Centre of Excellence.
3. The existing laboratories will be modernized as per the demands.
4. Digital Resources to setup NITTTR Cloud infrastructure.
5. Develop educational products

6.

Finance Plan

Income of the institute is planned to be enhanced by offering various degree awarding programmes at national and international level, increasing the consultancy, paid training programs and the user charges of the various services provided by the Institute.

- Enhance number of industry fellowships
- More sponsored projects
- International collaborative projects
- Enhance student's fees under various Govt. schemes
- More consultancy projects

7.

Administrative Plan

The following additional administrative posts will need to be created to cater to the needs of the system once it is granted the status of Deemed to be University:

- Deans, Associate Deans and HoDs manage the functioning of various departments
- Registrar
- Controller of Examination
- Supporting structures for all the above.

“Approach : Empowering with accountability”

8.

Governance Plan

The additional faculty and staff requirement for launching additional programs and activities works out as under for next five years. Existing best practices will be strengthened.

- In plans to have faculty to teach various courses, Govt. of India will be requested for sanctioned faculty (20), adjunct faculty (30), self financing faculty (50) and sponsored faculty (5-10).
- Self financed faculty to teach in change based training programmes in emerging areas
- Visiting faculty(National and International level) and Project leaders from reputed organisations and industries for cutting edge areas
- Adjunct faculty from industries
- Additional sponsored faculties
- Honorarium based retired faculty
- Additional 150 technical staff/secretarial staff

“Approach : Unambiguous, transparent and participative”

Annual Milestones and Action Plan

GOAL	Y 1- 5				
	Y1	Y2	Y3	Y4	Y5
Offer Multidisciplinary Programmes	<p>Deliverables: More certificate and PG Diploma programmes that are multi-disciplinary in nature</p> <p>Milestones: 5 Programmes in total</p>	<p>Deliverables: Initiate research projects that have investigators in multiple departments</p> <p>Milestones: Emerging areas have been identified at the Institute level, along with a budget for establishment of research centers in these domains. The following will have researchers from multiple departments: IoT Artificial Intelligence Robotics</p>	<p>Deliverables: Disseminate work through publications of interdisciplinary nature</p> <p>Milestones: Quality Journals that are at the intersection of two or more basic technical domains will be chosen to publish results: 3 Journal Publications</p>	<p>Deliverables: Apply for funded projects of interdisciplinary nature</p> <p>Milestones: Minimum of two submitted proposals since Y3 for each center Two interdisciplinary proposals accepted</p>	<p>Deliverables: Establish centers of excellence of a multi-disciplinary nature</p> <p>Milestones: Fully functional center of excellence in Cyber-Physical Systems and Healthcare Technologies Initiate Center for Engineering Education</p>

Annual Milestones and Action Plan

GOAL	Y 1- 5				
	Y1	Y2	Y3	Y4	Y5
Should have adequate proportion of Industry experienced qualified faculty with an experience of teaching in National/ International Institutes of repute as Guest Faculty / Visiting Faculty.	<p>Deliverables: Advertise regularly in international society publications</p> <p>Milestones: 1. Minimum of One advertisement in all prominent society publications</p>	<p>Deliverables: Increase visibility of the Institute in national and international levels.</p> <p>Milestones: 1. Hire one visiting faculty member from a foreign university for at least one semester period</p>	<p>Y3 – Y4</p> <p>Deliverables: Implementation of Faculty Exchange Programmes</p> <p>Milestones: 1. At least Two faculty should be exchanged at International level.</p>		<p>Deliverables: Collaboration with foreign university for faculty exchange programs</p> <p>Milestones: 1. A minimum of one official collaboration, indicating level and nature of interaction</p>
Other than regular courses, institutes should offer inter-disciplinary courses also. The inter-disciplinary courses need to be in spheres of emerging technology as well as areas which are relevant to development of our own country.	<p>Y1 – Y2</p> <p>Deliverables: Departments should create specific courses that are suitable for local needs.</p> <p>Milestones: 1. Identify departments that can collaborate and create content for certificate subjects that are of a highly interdisciplinary nature. 2. CONTINUOUSLY study local and regional requirements and their intersection with faculty strengths.</p>		<p>Y3 – Y4</p> <p>Deliverables: Deliver short term courses that can help in creating regular inter-disciplinary programs.</p> <p>Milestones: 1. Initiate certificate courses in chosen domains, targeting regional and local candidates.</p>		<p>Deliverables: Create new courses, and improve outreach with programs</p> <p>Milestones: Certificate courses that can provide skills for local population</p>

Annual Milestones and Action Plan

GOAL	Y 1- 5				
	Y1	Y2	Y3	Y4	Y5
<p>Should be a good mix of local, national and foreign students.</p>	<p>Deliverables Improve hiring from Indian subcontinent.</p> <p>Milestones: 1.Begin to participate regularly in college fairs every year in foreign nations, showcasing student and faculty achievement</p>	<p>Deliverables: Create units that provide extra support for foreign national students in academic and non-academic matters.</p> <p>Milestones: An administrative unit that is responsible for handling technical, non-technical, and administrative affairs of foreign students</p>	<p>Deliverables Improve existing hostel and extra-curricular infrastructure to attract students from western nations.</p> <p>Milestones: 1.One new hostel block as per international standards to be established</p>	<p style="text-align: center;">Y4 – Y5</p> <p>Deliverables: Increase students of Indian origin living abroad.</p> <p>Milestones: 1.Reach out to Alumni living abroad for recruiting their children 2.Target PIOs living abroad in western nations to recruit their children.</p>	
<p>Student who get admission should not be refused admission due to lack of financial ability</p>	<p>Deliverables Alumni network should be tapped for sponsoring students.</p>	<p>Deliverables: Start Industry funded student scholarships in different disciplines.</p>	<p>Deliverables Reach out to prominent individuals to provide annual scholarships to students.</p>	<p style="text-align: center;">Y4 – Y5</p> <p>Deliverables: Start alumni network based yearly/program length scholarships for students with financial need.</p>	

Annual Milestones and Action Plan

GOAL	Y 1- 5				
	Y1	Y2	Y3	Y4	Y5
	Milestones: 1. Increase Alumni endowed support to guarantee support for 5 financially needy students per year	Milestones: 1. Increase Industry support to 5 financially needy students per year.	Milestones: 1. Setup named scholarships that support 5 financially needy students per year.	Milestones: 1. Use existing Alumni corpus to support 25 financially needy students per year.	
Institutes engaged in scientific research should have laboratory facilities that do cutting-edge scientific research. On the other hand, latest methodology need to be used by faculty in social science and other interdisciplinary areas.	Deliverables Update research infrastructure Milestones: 1. Start work in established centers of excellence, with both PG and PhD students pursuing entry level projects with existing equipment. 2. Hire full-time PhD students as part of the centers.	Deliverables: Initiate projects that are technically on sound footing, and have good chance of success. Milestones: 1. Projects with concrete goals and objectives are defined, and work is initiated in these areas.	Deliverables Increase measurable outputs. Milestones: 1. Increase productivity of centers, as shown by quality publications.	Deliverables: Upgrade research infrastructure Milestones: 1. Infrastructure is upgraded based on requirements of the domain	Deliverables: Improve Social Sciences faculty in College Milestones: 1. Hire faculty from foreign universities for humanities and social sciences.

Annual Milestones and Action Plan

GOAL	Y 1- 5				
	Y1	Y2	Y3	Y4	Y5
Should have student amenities that are comparable to the ones offered at globally reputed institutions.	Deliverables Existing infrastructure improvement Milestones: 1.Improve existing facilities such as Wi-Fi, Gym, etc.	Y2-Y3 Deliverables: Improve IT related infrastructure. Milestones: 1.College information on website is provided in a better manner 2.SIS systems becomes more user friendly and appealing 3.Improved web interface for class selection and payment of fees etc.		Y4 – Y5 Deliverables: Improve teaching and living experience. Milestones: 1.Teaching learning infrastructure in classrooms consists of various technological aids. 2. Upgraded hostels and common areas	
	Governance structure of the institution should be distinct from the governance structure of the organization sponsoring/funding the institution.	<ul style="list-style-type: none"> • Governance structure as per Govt. of India • Participative Governance structure to be strengthened • Deans, Associate Deans, Registrar, Head of Departments, Controller of Examination etc. will be delegated powers and accountability. • Demand based Task force/Core teams shall be constituted to react to the demands. 			

Annual Milestones and Action Plan

GOAL	Y 1- 5				
	Y1	Y2	Y3	Y4	Y5
Should be financially sound, either in terms of recourse to public funding..	Y1 – Y3			Y4 – Y5	
	<p style="text-align: center;">Deliverable: To generate 1.5 times level of initial corpus funds Institution will have a very healthy and significant corpus funds at start of 15 years.</p> <p style="text-align: center;">Milestones: Funds to be generated primarily from students fees, share of the research and consultancy</p>			<p style="text-align: center;">Deliverable: To generate 1.5 times level of initial corpus funds</p> <p style="text-align: center;">Milestones Funds to be generated primarily from 1)students fees, 2)share of the research and consultancy, 3)profits from sale of products, licensing of IP, training programs etc</p>	
Should have teaching and research collaborations with global universities which are ranked in the most reputed global rankings..	<p>Deliverables: Enhance existing collaborations by writing new research proposals</p> <p>Milestones: Number of collaborations will be: 4</p>	<p>Deliverables: Create new SWAYAM courses jointly with global universities</p> <p>Milestones: Number of collaborations will be: 6</p>	<p>Deliverables: Create new SWAYAM courses jointly with global universities</p> <p>Milestones: Number of collaborations will be: 8</p>	<p>Deliverables: Win R&D funding and offer inter-disciplinary courses</p> <p>Milestones: Number of collaborations will be: 10</p>	<p>Deliverables: Creating visiting faculty positions (with faculty from global universities) which will be used for creating teaching and research programs</p> <p>Milestones: Number of collaborations will be: 10</p>

Annual Milestones and Action Plan

GOAL	Y 1- 5				
	Y1	Y2	Y3	Y4	Y5
<p>Should strive to achieve social impact by engaging in applied research and innovation in issues of concern to developing societies.</p>	<p>Deliverable: Directly leverage medical hospital for development of new products</p> <p>Milestones: Socially relevant products (1) Innovation (2) Research (3)</p>	<p>Deliverable: Directly leverage medical hospital rural outreach program for development of new products</p> <p>Milestones: Socially relevant products (1) Innovation (2) Research (3)</p>	<p>Deliverable: Manufacturing of new products for rural medical outreach</p> <p>Milestones: Socially relevant products (1) Innovation (2) Research (3)</p>	<p>Deliverable: Leverage NSS activities to enhance rural education</p> <p>Milestones: Socially relevant products (1) Innovation (2) Research (3)</p>	<p>Deliverable: Bring about significant changes in local rural populations – in health and education</p> <p>Start new programs in water resource conservation</p> <p>Milestones: Socially relevant products (3) Innovation (10) Research (20)</p>

Annual Milestones and Action Plan

GOAL	Y 1- 5				
	Y1	Y2	Y3	Y4	Y5
Student Admission Plan	<p>Deliverable: 350 Admissions</p> <p>Milestones: Create outreach programs and a special international cell to attract students from neighboring countries.</p>	<p>Deliverable: 450 with 2% foreign enrollment</p> <p>Milestones: Extensive participation in international educational fairs and outreach activities,</p>	<p>Deliverable: 550 with 4% foreign enrollment</p> <p>Milestones: Enhance domestic participation by creating a brand impact</p>	<p>Deliverable: 700 with 6% foreign enrollment</p> <p>Milestones: Enhance domestic participation by creating a brand impact</p>	<p>Deliverable: 750 with 10% foreign enrollment</p> <p>Milestones: Create significant impact at local rural populations through the launch of novel interdisciplinary courses (relevant to rural populations) and increase student strength</p>

Annual Milestones and Action Plan

GOAL	Y 1- 5				
	Y1	Y2	Y3	Y4	Y5
<p>Should encourage faculty to publish regularly in peer-reviewed journals and engage academically with the issues of concern to the society.</p> <p>Should publish research work at the mean rate of at least one publication per faculty member each year in reputed peer-reviewed international journals based on publication made by top 100 global Universities in these journals.</p>	<p>Y1 – Y5</p> <p>Deliverable: Average publication rate of 2 per faculty in 5 years</p> <p>Milestones:</p> <ol style="list-style-type: none"> 1. Through enhanced external R&D funding 2 publication in SCI Journals per faculty can be easily achieved within 5 years. 2. Institute will initiate financial awards through CPDA funds for faculty with good publications. This will further increase the publication rate. <p>Collaboration with faculty from global universities will definitely increase the publication rate.</p>				

Annual Milestones and Action Plan

GOAL	Y 1- 5				
	Y1	Y2	Y3	Y4	Y5
Should have a better library facility with subscriptions to reputed journals in the areas of its course offerings.	<p>Deliverable: To significantly increase subscriptions to world class journals</p> <p>Milestones: To subscribe to 40% of all top class peer reviewed journals in relevant areas</p>				

Salient features for Implementation:

- *Setting goals after brainstorming*
- *Monitoring committee and periodic review*
- *Feedback analysis and intervention*
- *Documentation and record-keeping*
- *Publishing and information dissemination*

Uniqueness

NITTTR

- 2020 :** Launched video call-cum-LMS (uLektz Campus) and video conferencing for interactive class (uLektz Meet) for course offering as part of Aatmanirbhar Bharat Abhiyaan. A product developed in collaboration with uLektz Learning Solutions Pvt Ltd, Chennai.
- 2020 :** Trained 47900 faculty members on-line during initial 3 months of lockdown.
- 2020 :** Launching of ME programmes in AI, IoT and Robotics with support of Tech Mahindra Limited.
- 2019-20 :** Technology support for MSE industries like Eastman Cast and Forging Limited, Ludhiana and worked for providing solution for NGT compliance.
- 2019 :** Shifted from paper based registration to NCDL that is an App of the institute and developed registration software i.e. inhouse educational product developed
- 2019 :** Developed unique curricula in emerging areas for AICTE.
- 2018-19 till date :** Developing modules and research providers for SWAYAM project of Govt of India.
- 2018-19 :** Launching of Arpit courses on Real-time Power System Analysis and Smart Grid.



Uniqueness

NITTTR

- 2018 :** Launching of TechSpardha, an exclusive forum for ME students' competition.
- 2019 :** Developed three modules for NITTT, an initiative of Ministry of Education and AICTE.
- 2017-18 :** Launching of industry sponsored Lab and PhD fellowship with support of ABB, Bangalore; Typhoon HIL, Switzerland; and Tech Mahindra Limited.
- 2014 :** Creation of NCTEL (NITTTR Chandigarh Technology Enabled Learning) that led to internationalization of institute activities through social media (YouTube)
- 2012 :** Established Gian Vani Centre voice educational channel sanctioned by Ministry of Broadcasting and Information, Govt of India.
- 2012 :** Launched interactive live training programmes using Google Hangouts, the first ever social media based technical faculty training programme.
- 2009 :** Became part of the Community Development Mission through CDTP Scheme of Govt of India. Rural Development Department engaged themselves for CDTP and PWD.



Uniqueness

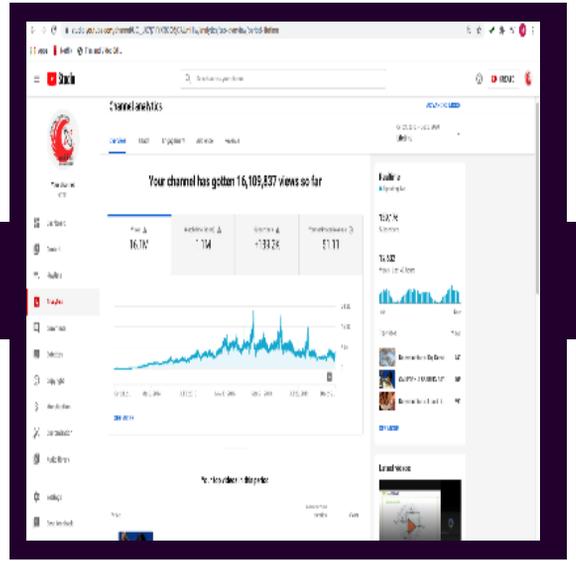
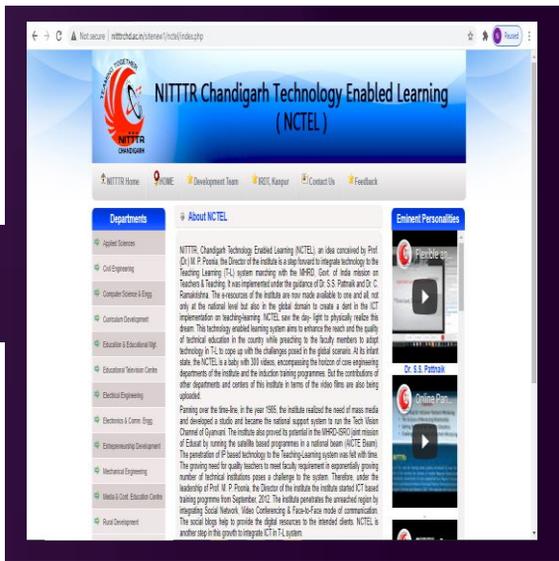
NITTTR

- 2006 : QIP (Poly.) Centre for PhD to enhance the quality of polytechnics teachers
- 2005 : Launched Module ME Programmes facilitating 90% of polytechnic teachers of the country to get master degree.
- 2004 : Became national coordinator of EDUSAT for AICTE national beam by connecting 104 technical institutions in the country

TTTI

- 1992 : Started offering ME/MTech programmes.
- 1987 : Re-organising and Restructuring AICTE
- 1986 : Formulation of National Policy on Education
- 1982 : Established Media Centre and in 1985 created Educational Television Centre for developing quality print and non-print instructional resource materials.
- 1971 : Established Curriculum Development Centre to develop and revise curriculum for technical institutions.
- 1967 : Launched degree awarding Quality Improvement Programmes for Polytechnics Teachers.







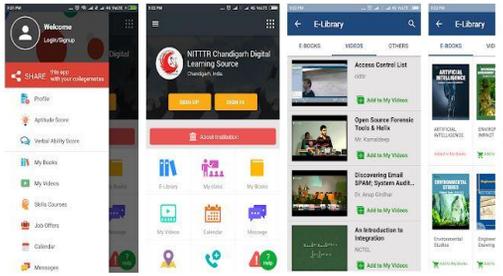
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Details of Participants for Certificate Printing

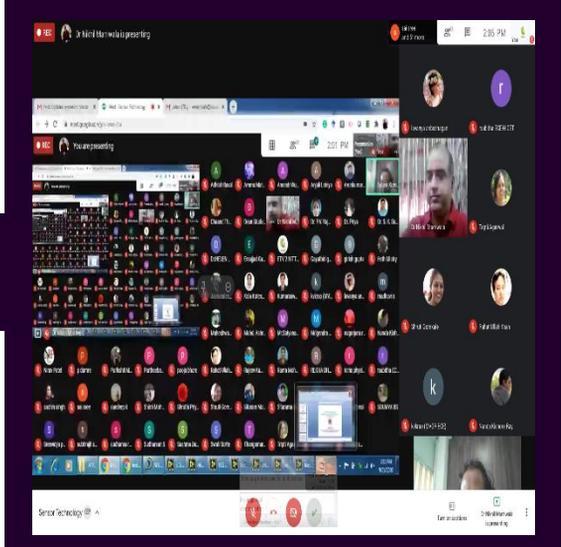
Select the Course Delivery Mode:

Target Group: Polytechnic Engineering College Industries Students Others

Session:

Co-ordinating Department:

Best Viewed: 1024x768 resolution and Mozilla Firefox Browser
Developed and Maintained By: Computer Science & Engineering Department



NRC Course on Real Time Power System Analysis and Smart Grid

uLektz MEET Audio and Video Conferencing Solution for Live Classes www.ulectzmeet.com

Consulting and advisory partner
National Institute of Technical Teachers Training and Research (NITTR), Chandigarh

Host an online class

Audio and video conferencing platform exclusively designed for conducting live and interactive online classes.

<p>Very Easy To Use</p> <ul style="list-style-type: none"> Sign Up for Free Start or schedule a meeting Add or invite participants No software downloads required 	<p>Seamless Integration with LMS</p> <ul style="list-style-type: none"> Single invite to whole class Automated students attendance Store meeting recordings in eLibrary Institution Administrator Dashboard 	<p>Key Features and Highlights</p> <ul style="list-style-type: none"> Secured and HD quality Audio and Video Host meetings with upto 50 participants File sharing and Screen Sharing Chat, Hand Raise for students engagement
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JUSTIFICATION

University Characteristics Demonstrations by the Institute and strengthening the same on getting Deemed to be University

Institute is working at National level and providing demand driven and need based education & training programmes catering to the diverse levels of manpower of Professional Institutes, industry and technical education system. The Institute has developed systematic approach for designing, offering & evaluation of programmes through an independent curriculum development department to cater to the needs of the different types of clients. In addition, the institute offers programmes in the area of entrepreneurship development and industrial practices for enhancing self-employment. Institute has the state of the studios for development of e-resources as per the up to date requirements of the curriculum. Rural Development department of the institute caters to the demand of the community for the socio economic growth of the society. It also facilitates the implementation of various national missions through its network of various institutions in the country. Thus the institute works for meeting the demands of various diverse cross-sections of the society. The media engineering department of this institute contributes to innovative instructional material and the education & education management takes care of pedagogical needs.

The unique modular ME programmes started in the year 2005 and ICT based remote learning using Google Hangout are the vivid examples. Launching of industry attached emerging Master of Engineering programme in Robotics, AI and IoT further justify the intention of the institute to remain updated and work for industry and Society

The affiliating universities with less flexible structure do not allow flexibility in offering the programmes in emerging areas which restricts the availability and usability of the programmes to a very limited number of students. The working professional and fresh students willing to take these programmes on a flexible mode are constrained due to university requirement of fixed mode of offering.

Being the Technical Teachers Training Institute, the institute plans to offer many courses in emerging areas which are some time non-conventional in nature hence, do not get approval of the university. So the deemed to be university status would facilitate the institute to offer time bound demand driven programmes to meet the requirements of National Mission.

The flexible concept like recognition of prior-learning, pass book of credits (now Academic Bank of Credits), multidisciplinary CBCS system never got a go ahead from the university due to their rigidity. The modular modes of course offering multi-entry and multi-exit was also not permitted.

The institute proposes to introduce the following courses in a flexible mode which is possible only if the institute is granted degree awarding status:

Credit based training programmes in emerging areas (Empowering)

- a) Blended MOOCs programmes leading to PG degree/PG diploma/ Diploma/ certificate in emerging areas like Data Science, Biological Engineering, Infrastructural Engineering, Industry 4.0, Sustainable Engineering, Robotics and Cybernetics, Cyber Security, Integrated Manufacturing, Smart Engineering, Artificial Intelligence, Augmented Reality, Virtual Reality, Gaming and other demand driven areas.
- b) Foundation level training programmes to Assistant Professors, advanced content training programmes to Associate Professors, Leadership and management programmes to Professors in contact mode/blended mode/MOOCs mode

Salient Features

- ❑ Each programme will have in-built pedagogical tools and processes which are missing in conventional institute.
- ❑ Programmes shall be offered based on technological forecasting and advancements.
- ❑ Real life training through industry attached programme
- ❑ Training leading to credits
- ❑ Contact mode programmes
- ❑ Blended/MOOCs mode programmes
- ❑ Passbook of credits to be maintained for programmes leading to certification (Academic Bank of Credits)
- ❑ Earned certifications through training leading to Degree/Diploma
- ❑ CBCS based curricula leading to OBE
- ❑ NSQF compliant curricula & its implementation for award of diploma in engineering & technology.

***“ United we **Perform**
Together we **Achieve**
Team we **Win** ”***

***Motto: Be Aatamnirbhar and help others to be
Aatamnirbhar***

राष्ट्रीय पुरस्कार 2013

3 दिसम्बर, 2013, विज्ञान भवन, नई दिल्ली



National Awards for the

Empowerment of Persons with Disabilities, 2013



Dr. M.P. Poonia, Director NITTTR Chandigarh receiving National Award from Shri. Pranab Mukherjee, Hon'ble President of India at Vigyan Bhavan, New Delhi





PARTNERING, NETWORKING, DIGITIZING & EMPOWERING FOR QUALITY TECHNICAL EDUCATION

**NATIONAL INSTITUTE OF TECHNICAL TEACHERS TRAINING AND RESEARCH
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