



मोतीलाल नेहरू राष्ट्रीय प्रौद्योगिकी संस्थान इलाहाबाद
इलाहाबाद-२११००४ [भारत]
Motilal Nehru National Institute of Technology Allahabad
Allahabad-211004 [India]

VISION-2020

Preamble

Motilal Nehru National Institute of Technology (MNNIT) Allahabad was established in 1961 as Motilal Nehru Regional Engineering College (MNREC) Allahabad under the joint venture of Government of India and UP Government. The primary objective was to impart undergraduate teaching leading to produce quality skilled manpower in terms of qualified, competent and good engineers for technological advancement of the country for overall sustainable development.

In 2002, Government of India envisaged the importance of RECs in the development of the country and decided to convert all the RECs into National Institute of Technology (NIT), as Institute of National Importance by an Act of Parliament. This landmark decision has given the impetus to not only imparting quality UG teaching but also to start more specialized Master's Programs and strengthen research activities in the form of Ph.D. Research and development projects and producing high quality Ph.D.'s to serve the nation. MNNIT Allahabad has completed 50 years of its glorious journey and has established many milestones in the past 50 years. There will be many more stairs to surmount in the coming years in the line of the vision of the nation. The Vision-2020 MNNIT Allahabad makes an attempt to document the future goal of the Institution to emerge as the leading Technical Institute of the Country and set the benchmark for others to follow.

The Vision 2020 of the country the aim is focused on energy, entrepreneurship and innovation. In light of India Vision 2020, MNNIT-Allahabad as a premier technological institute has revisited its Mission and Vision through a series of brainstorming sessions in order to tune it to the goals set by India Vision 2020 and future needs of the country. The following Vision, Mission and specific roadmap for 2020 has been set for the Institute. Vision and Mission statement are of general in nature which has been developed to reflect our mission & vision very clearly to the stakeholders.

VISION

To establish a unique identity for the Institute amongst National and International Academic and Research Organisations through knowledge creation, acquisition and dissemination for the benefit of Society and Humanity.

MISSION

To generate high quality human and knowledge resources in our core areas of competence and in emerging areas to make valuable contribution in technology for social and economic development of the nation and to make organized efforts for identification, monitoring and control of objective attributes of quality for continuous enhancement of academic processes, infrastructure and ambiance.

The present document outlines road map to achieve the vision 2020 of the Institute.

1. Undergraduate Education

The Institute is committed to make sincere efforts to make the undergraduate curriculum flexible. The Institute aims to improve the environment of education in the current decade (2010-2020). The curriculum is planned to be developed in a way to make it more flexible so that students feel motivated to acquire skills, learn principles and imbibe a spirit of innovation.

The following action plan is suggested.

- Compulsory review of the undergraduate academic environment should be exercised every four years. It should include revision of the curriculum consisting of the existing courses, introduction of new courses, new methodologies examination and evaluation system, grading system and laboratory practices. The review should be based on feedback from the students, inputs from industry and alumni and other stakeholders, and the best practices being adopted in the leading institutions and universities.
- State-of-the-art laboratories in each department need to be established. More emphasis should be given the laboratory teaching so that students have hand-on experience. Students should be given opportunities to innovate and implement new ideas through practical design problems.
- Students–faculty relations should be further improved. Every department should form an active professional student body that would organize several events and programmes.
- Undergraduate students should be encouraged for research activity. Element of research work to be included in the course curriculum. Special credits for research work should be given and participation of students in the sponsored research/consultancy projects should be encouraged.
- Alongwith regular curriculum the undergraduate students will be taught Professional ethics.
- NCC/NSS will be made compulsory for all undergraduate students by assigning credits.
- New undergraduate programmes in the following emerging areas are proposed to be launched B.Tech in Mechatronics, Material Science and Engineering, Built Environment Engineering, Instrumentation Engineering, Metallurgy and B.Arch. program in Architecture is proposed to be started in view of the growing demand in the region.

2. Postgraduate Education

In order to fulfill the vision, the postgraduate education in the Institute should be given a new dimension in the current decade to provide quality manpower in the emerging areas of technology.

The following is the action plan.

- Each department should undertake a promotional plan for faculty members to travel to neighboring institutions and deliver lecture there to motivate the students for doing M.Tech. in different disciplines at MNNIT Allahabad.
- Each department should prepare a calendar of professional activities at the start of every semester. Participation of postgraduate students in professional activities will be made mandatory.
- Every department will have at least one state-of-the-art laboratory for research work. Each department should start a research symposium for the students every year. Students will be asked to present their research work. Provisions will be made to invite students from other universities/Institutions. Best research work will be recognised and be given an awards to be instituted by the Institute.
- New postgraduate programmes in following disciplines will be started:
- **M.Tech.** : Hydro-power & Irrigation Engineering, Transportation Engineering, Construction Engineering & Management, Energy System, Instrumentation & Signal Processing, Robotics & Automation, Nano-Technology.
- **Integrated M.Sc. Programs in Physical & Chemical Sciences to cater to the needs of various Research Institutes of the country.**
- **Integrated MBA, Executive MBA, Postgraduate diploma in IPR**
- **Integrated Dual degree (B.Tech& M.Tech.)**

3. Research

The standing of an Institution of higher learning is judged by its research activities and contribution in the advancement of knowledge in the emerging areas. The research culture needs to be fostered in the minds of research students as well as the young undergraduate students.

The institute will make all efforts to strengthen collaborative research programmes in the following emerging areas with strong user (industry/society) linkages:

- **Advanced Technologies:** Construction Productivity Analysis, Mechatronics, Industrial Knowledge Management Systems, Development & Condition Monitoring of Flow Devices.
- **Electronics & Communication:** 4 G Wireless & Mobile Networks, Signal Processing, Optical Computation and Communication, Sensor Network, VLSI, Embedded Real Time System.
- **Energy Engineering:** Bio-fuels, Solar Cells, Hybrid Renewal Energy Systems, Virtual Instrumentation, Distributed Energy System, Energy Audit, Development of Energy Efficient Devices & Technologies.

- **Environment:** Urban and Industrial Waste Disposal, Rural Water Treatment, Ground Water Management, Rain Water Harvesting.
- **Exploration Technology:** Remote Sensing and Resource Planning, Geotechnical Exploration
- **Global Business:** Strategic Alliances, Intellectual Property Rights (IPR), Logistics, Forex Management, Socio-economic Policy Planning.
- **Health Care:** Bio-mechanics, Genomics and Proteomics, Bio-informatics, Chem-informatics, Bio-Medical Devices & Rehabilitation.
- **Housing:** Health Monitoring and Rehabilitation of structures, Smart and Energy Efficient Structures.
- **IT & Services:** E-governance, Web Service, Social Networks, Web-3, Multi-media Technology, Digital Right Management Systems.
- **Manufacturing:** Nano-fabrication, Robotics.
- **Material Technology:** Composite, Smart, Multi-functional and Nano-materials, MEMS and Smart Sensors.
- **Strategic & Computing Technology:** Grid & Cloud Computing, P2P, Evolutionary Computing, Information Security
- **Technology for Local & regional development:** Non-conventional Employment Opportunities, Rural-urban Migration, Social Entrepreneurship, People Public Participation (PPP)

With the collaborative research programmes the research output in form of publication in SCI journals and patents will increase. Also effort will be made to double the sponsored and consultancy research project by the end of the next decade.

4. Centre of Excellence

Centre of Excellence in the respective fields of specializations from different academic departments will be set up. The sole objective of establishing these centers would be to generate research culture among UG and PG students. These centres will facilitate quality research and development activities along with resource generation by the way of taking consultancy and other research projects. During the current decade following areas will be given due importance for establishing the centres of excellence.

- Advance Centre for Interdisciplinary Research
- Centre for Biomedical Devices & Implants
- Health Monitoring and Rehabilitation of Structures, M/Cs & Devices.
- Centre for Energy & Environment
- Virtual Instrumentation
- Next Generation Communication Networks
- Software Quality Certification & Software security
- Centre for Development & Condition Monitoring of Flow Devices
- Centre for Advance Manufacturing

A dedicated Centre for Interdisciplinary Research (CIR) is underway to promote and facilitate inter- and trans-disciplinary research. The centre will house all sophisticated high-end machines to carry out interdisciplinary research in the emerging areas. The centre will take care of challenges likely to be posed by disruptive technologies. The vision of the Institute is to convert the Centre as the Central facility for the entire eastern region of the country.

5. Society

As an institute of National importance, institute strongly feels that activities of the Institute should make positive impact on the Society. In order to achieve the objective a centre shall be established to cater to the needs in the following broad areas:

- Promoting social awareness about national problem and possible solutions
- International Collaboration for faculty, students and researchers.
- Faculty Orientation and Development for the faculty members of different neighboring institute and our own faculty members.
- Skill Development for Rural Artisans and Unskilled persons
- Innovation and Entrepreneurship Development
- Provide facilities to underprivileged section of the society
- Social Audit of Development Programs

6. Resource Sharing

The Institute proposes to increase the linkages with other NITs for boosting the research activities and sharing the resources in terms of research facilities and faculty. Further, the Institute envisages to establish strong tie-up with other Institutions in and around the city of Allahabad such as IIIT-Allahabad, HRI-Allahabad, Allahabad University, IIT(BHU), Varanasi, IIT-Kanpur and others so as to make optimum usage of the facilities available with all these Institutions put together in terms of technical expertise as well as research and other infrastructural resources.

7. Faculty Development

It is proposed to make sincere efforts to fill up the vacancies in faculty positions and reach the target of 362 faculty members by the middle of this decade. The Institute will propose a 4-tier flexible cadre system for faculty. In order to strengthen the faculty resource the following action plans have been envisaged.

Dual academic citizenship: It is proposed to invite faculty members from around the world to have joint appointments with MNNIT Allahabad. These faculty members will spend some time at MNNIT, guide students, deliver special lectures and bring sponsored research funding through various International funding agencies to support the laboratory activities. The association of such eminent persons will bring a new environment of research.

The provisions for appointing adjunct faculty, visiting faculty and distinguished honorary faculty will be explored in addition to regular employments. The faculty members will be encouraged to take up research projects in collaboration with foreign experts/ foreign universities of repute in order to get an international exposure. Various incentive schemes for promoting research will be launched to encourage faculty to get involved in quality research

8. Resource Generation

In the current decade (2010-20), the institute wishes to create 5 chairs with the support of the alumni to attract the best talents of the country to this Institution. Further institute will make efforts to create corpus funds from its own revenue and donations from the Alumni and other interested philanthropies to create corpus funds to provide travel support to UG, PG and Ph.D students for attending international conferences every year. For all these the institute shall further strengthen the alumni relations and research and consultancy services. In the current decade, the institute wishes to establish an endowment fund by mobilizing the contribution from Alumni and fixed percentage from testing and consultancy services.

9. Student Activities

To cater to the needs of increasing student strength which is expected to go beyond 6000 from the present strength of about 5000, the Institute needs to augment the basic infrastructural facilities. For this, growth of students body, the planning of facilities, management of hostels, the organization of sports, cultural and technical events beyond regular academic curriculum, the maintenance of student relations are very sensitive and crucial issues. The involvement of faculty in many student- related activities such as culture, sports and hostel management needs considerable improvement. The fee structure of various academic programmes also needs a careful review. The fees should be commensurate with the quality as well as expenditure incurred in a program. A high level of subsidy will affect the quality of academic programmes. The student counseling service needs to be strengthened. It is necessary to provide career counseling, academic counseling and personal counseling activities. Each department should start the counseling activity. It will provide student a clear picture of advantages and disadvantages of different career options. The existing Students' Activity Centre has to be expanded to all the students. An ambitious project of developing a state-of-the-art sports complex has been planned to provide all kinds of indoor and outdoor games.

10. Institute Infrastructure

Developing and maintaining a good quality infrastructure is the key ingredient for achieving excellence in any academic institution. There is an urgent need to create additional infrastructure for academic departments, faculty residences, PG and research hostels and married scholar accommodations.

In the current decade the following minimum infrastructure will be added.

- 2500 additional rooms in hostels for UG and PG students so that every students gets single seated accommodation.
- 100 married accommodation for research students including QIP students and post doctoral/project fellows.

- 200 faculty residences with car parking and other basic facilities.
- Community centre, Student Activity Centre and Marketing complex in hostel and residential areas.
- 15 state-of-the-art lecture halls with minimum 200 seating capacity.
- 25 state-of-the-art lecture halls with minimum 100 seating capacity.
- More laboratory space in different department/cells.
- Separate library building with central air-conditioning and other modern learning resources.
- Faculty offices in different academic developments/cells.
- High speed Wi-Fi internet connectivity in all campuses (Proposed bandwidth target is 1.5Gbps by the end of this decade).
- Uninterrupted power supply should be ensured.
- Modern food courts with 24 × 7 service.

11. Human Resource Development: The supporting staff members of Academic Institution need to well-trained. Particularly, the technical should have the expertise to handle sophisticated high-end machines. At the moment there is an acute shortage of qualified technical and ministerial staff. A comprehensive HRD policy is being chalked out for this purpose. All staff members must undergo continual training and appraisal. Staff members should be able to move in their career without any delay through rigorous internal assessment process. The institute needs more trained technical manpower for the laboratories. Staff members should have avenues of personality development. Institute should conduct different kinds of personality development and group dynamics classes. Staff members should be engaged more vigorously in official as well as extra-mural activities.

12. Governance: Effective governance shall ensure continuous growth of the Institute. The issue of transparency has to be reviewed from time to time. The Institute is committed to provide transparent administration. In view of Right to information Act, it becomes all the more essential to develop process of governance which is transparent.

Another method of effective governance is through the process of automation. ERP (Enterprises Resource Planning) technology has been planned to be implemented in all administrative processes, in order to ensure an effective administrative service. The decision-making processes will use the tools of information technology. The agenda and issues of several committees such as Academic Senate, Building & Works Committee, Finance Committee and many other groups can be discussed over digital virtual platforms as when required. This will reduce the burden of administrative load on faculty members and will improve the efficiency of decision making. An e-grievance cell has been constituted to address the grievances of the stakeholder in a fast and transparent way. This system will be further strengthened to fix accountability on the defaulters in providing service.

Conclusion

With the Vision-2020 document ready after several rounds of brainstorming sessions, the Institute is geared up to achieve the goal step-by-step by following the roadmap laid down in the Vision document. Several steps have already been initiated to match the vision of the Institute with the goal set in India Vision-2020 by taking into account the changing needs of the country and dramatic developments in the field of Science and Technology. The progress and growth of the Institute will be evaluated after regular intervals to compare and contrast them with the projected aims and objectives and necessary corrective measures will be taken in order to sustain the growth in the right direction. It is believed that with this Vision-2020 document and the roadmap to achieve the goal in place, the growth of MNNIT, Allahabad will be phenomenal by the end of current decade (2010-2020).
