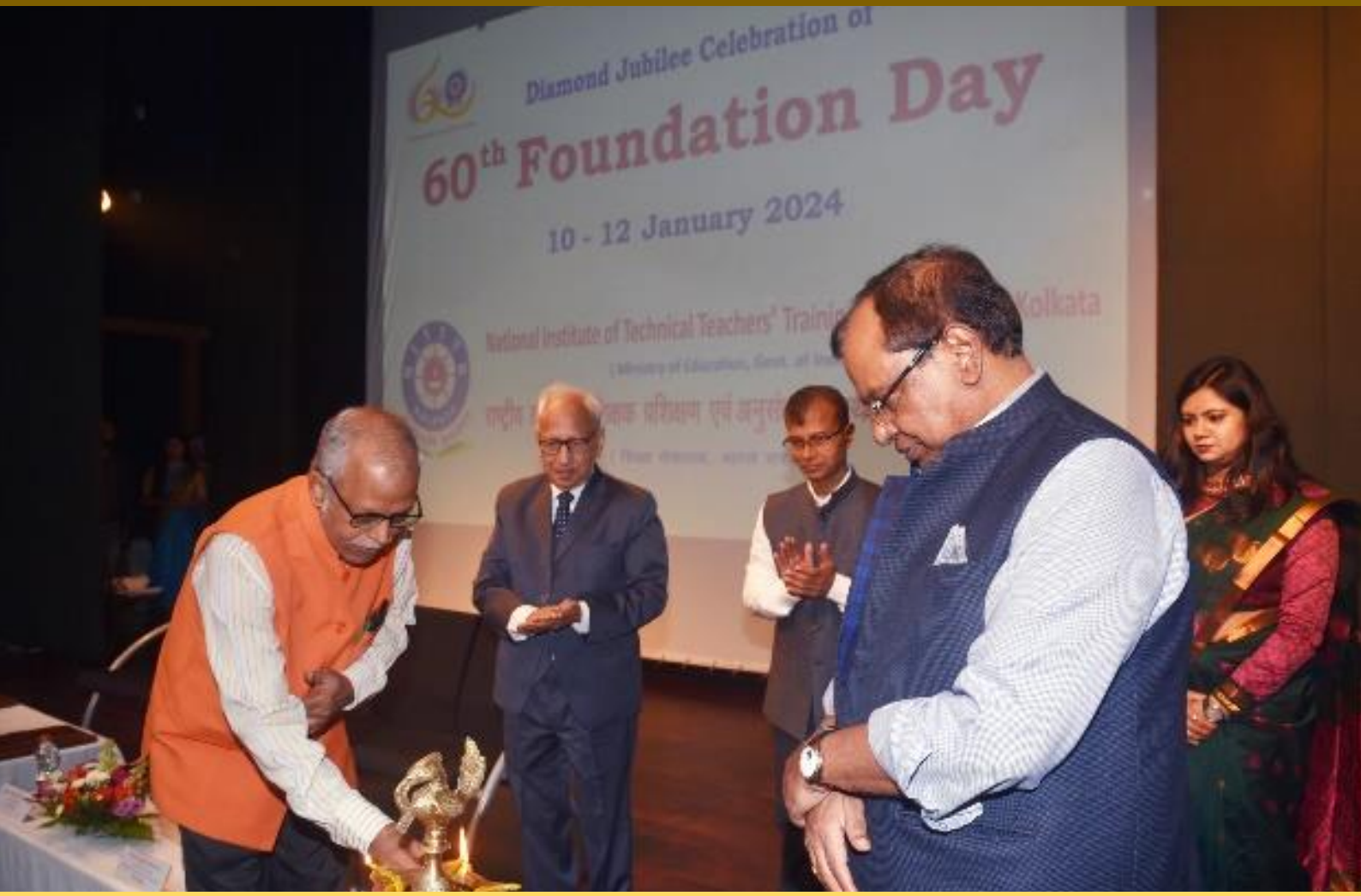
National Institute of Technical Teachers' Training and Research, Kolkata

# Newsletter




**As per Government of India notification No. 9-1/2021-U.3(A) dated 22nd February, 2024, in exercise of powers conferred under Section 3 of UGC Act, 1956, the Ministry of Education, on the advice of the UGC, has declared NITTTR Kolkata as an Institution deemed to be University under distinct category.**

**Vol. 16, No. 01 || January - April 2024**



## *Message from Director*

National Education Policy (NEP) 2020 is one of the epoch-making educational policies in independent India intended to transform the Higher Education system to be on par with global standards. One of the features of this policy is to provide flexibility to students in terms of choice of subjects to study and various academic possible pathways for which a creative combination of disciplines with multiple entry and multiple exit points is to be designed and developed. It was envisioned that a student could choose various flexible learning options that can culminate in certain feasible academic trajectories, leading to the award of a certificate, diploma, and degree. That can be possible with the proper implementation of multiple entry and exit points in the academic programmes offered at various universities and institutes which can help in eliminating the rigid boundaries that have existed in India since the inception of the modern higher education system. Of course for this multiple entry

and multiple exit that can ensure seamless student mobility, it is essential to have a certain framework between or within degree-granting HEIs through a formal system of credit recognition, credit accumulation, credit transfers, and credit redemption. It must be kept in mind that there might be certain instances when students may drop out of the academic program mid-way for various reasons. It is essential to keep proper records of the clearance of credits for such incomplete academic programmes. As a result, a student can be provided a lower level of certification if he desires to do so which can result in eliminating age-old rigid boundaries of the Indian academic system to ensure minimum-year-loss to students in the event of exiting during any program. The flexibility in learning that may usher lifelong learning can be accomplished on the principle of a multiple entry and exit system for which the Academic Bank of Credits (ABC) is being introduced. Note that the Academic Bank of Credits (ABC), a virtual/digital storehouse is designed and developed that store the information on the credits earned by individual students throughout their learning journey. It can allow students to open their accounts and provide multiple options for entering and leaving educational institutes. For this purpose, each student in India can have a unique 12-digit identity code known as APAAR ID that can be used by a student to store, manage, and access all their academic credits, including degrees, diplomas, certificates, training details, and co-curricular accomplishments digitally. The NITTR Kolkata being declared as a deemed to be university is in the process of incorporating these features in the new curriculum. Let me end it with the following Indian thought;

**हस श्वसिहि मंदं गच्छ च**

Smile, breathe and go slowly

**Prof. Debi Prasad Mishra**
*Director, NITTTR, Kolkata*

ARTICLE

# Relevance of Ancient Indian Science/Technology/Engineering/Management (STEM) in Contemporary India

***Samir Roy***
*Professor, Dept. of Computer Science & Engineering*

## 1. Introduction

It has been historically established that a very high level of civilization emerged in ancient India. The living evidences of this civilization include the beautiful language Sanskrit, two epics Ramayana and Mahabharata, the Vedas and the Upanishads, the Shastras, Puranas, Literature, Architecture, Agriculture, various art forms e.g. painting, music, dance, and so on. Moreover, our civilization achieved a lot in the field of STEM. Before we consider the issue of relevance of ancient Indian STEM in modern times, let us quickly review a few significant contributions of ancient India in this field.

## 2. Ancient Indian STEM

Let us have a quick review of some of the significant achievements in the area of ancient Indian STEM.

***2.1. Idea of ZERO*** : It is a well-known fact that the idea of zero as a number, and a symbol for it, was introduced by ancient Indian genius Aryabhatta. The introduction of zero led to the positional number systems, particularly the decimal number system.

***2.2 Chakrabala algorithm:*** The *chakravala* method is a cyclic algorithm to solve indeterminate uadratic equations. This method for obtaining integer solutions was developed by Brahmagupta in the 7$^{th}$ century. Another mathematician, Jayadeva, generalized this method for a wider range of equations, which was further refined by Bhāskara II in his treatise *Bijaganita*.

***2.3 Ruler Measurement:*** Excavations at Harappans sites have disclosed rulers made from ivory and shell. Marked out in minute subdivisions with amazing accuracy, the calibrations correspond closely with the *hasta* increments of 1 3/8 inches,

traditionally used in the ancient architecture of South India. Ancient bricks found at the excavation sites have dimensions that correspond to the units on these rulers.

*2.4* ***Atomic Theory:*** Ancient Indian scientist Kanad proposed the atomic theory centuries before Dalton's atomic theory. He speculated the existence of *anu* i.e. the smallest indestructible particle. He further held that atoms of same substance combined with each other to produce *dvyanuka* (diatomic molecules) and *tryanuka* (triatomic molecules).

*2.5* ***The Heliocentric Theory:*** Mathematicians of ancient India made accurate astronomical predictions. Aryabhatta's book *Aryabhatiya,* represented the essence of astronomical knowledge at the time. He correctly concluded that the Earth is round, rotates on its own axis and revolves around the Sun which is the essence of the heliocentric theory. He also made accurate predictions about the solar and lunar eclipses, duration of the day as well as the distance between the Earth and the Moon.

2.6 **Wootz Steel:** Wootz steel, developed in ancient India, is a crucible steel known by different names such as *Ukku, Hindwani* and *Seric Iron*. This steel was used to make the famed Damascus swords. Produced by the Tamils of the Chera Dynasty, the finest steel of the ancient world was made by heating black magnetite ore in the presence of carbon in a sealed clay crucible kept inside a charcoal furnace.

*2.7* ***Smelting of Zinc:*** India was the first to smelt zinc by the distillation process, an advanced technique derived from a long experience of ancient alchemy. Zawar in the Tiri valley of Rajasthan is the world's first known ancient zinc smelting site. The distillation technique of zinc production goes back to the 12th Century AD.

2.8 ***Surgery:*** Written by Sushruta in 6th Century BC, *Sushruta Samhita* is considered to be one of the most comprehensive textbooks on ancient surgery. The text mentions various diseases, plants, and cures along with techniques of plastic surgery. The *Sushruta Samhita*'s most well-known contribution to plastic surgery is the reconstruction of the nose, known also as rhinoplasty. The first cataract surgery was performed by Sushruta in 6$^{th}$ century BCE. Sushruta's surgical works were later translated to Arabic language and through the Arabs, his works were introduced to the West.

*2.9* ***Ayurveda:*** Long before Hippocrates, Charaka authored a foundational text, *Charaka-samhita,* on the ancient science of Ayurveda. Known as the Father of Indian Medicine, Charaka introduces the concept of digestion, metabolism and immunity in his book. Charaka's ancient manual on preventive medicine remained a standard work on the subject for two millennia and was translated into many foreign languages, including Arabic and Latin.

Now, in spite of such great achievements in the past, the question that confronts us is how far the ancient Indian STEM are relevant in today's context. Before we try to answer this question, we should ponder over the nature of modern science as a cognitive process.

## 3. Science in Modern Age

Modern Science is the outcome of European Renaissance. Its foundation was laid by the works of a number of Scientists-Philosophers e.g., Galileo Galiei, Rene Descartes, Blaise Pascal, Isac Newton, Gottfried Wilhelm Leibnitz, James Prescott Joules, Michael Faradey, James Clark Maxwell, and so on. Two key concepts that act as the foundation of scientific methodology are quantification, and experiment. Quantification, systematized by Mathematics, which is considered to be the language of science, has advanced a long way from ancient number-crunching exercise. And the idea of experiment is to explore a natural phenomenon under controlled environment. In real life, invention of the steam engine and electricity initiated the industrial revolution which is being continued in contemporary world through electronics and information and communication technology. Modern STEM has transformed human life to such an extent that in spite of its toxic effects on earth and civilization it is impossible to reverse the process. The power of modern STEM lies in the fact that it is suitable for mass production. Without mass production it is not possible to percolate the benefits of the STEM to common man, thereby enhance the quality of life of a common man, in a cost effective manner.

## 4. Scope of Ancient Indian STEM in Contemporary India

Now, let us return to the question, is there any relevance of ancient Indian STEM in the present context? I think, the answer to this question lies not in

STEM at all, but in economy. If we can take the benefits of ancient Indian STEM to common people and establish it as an effective problem solving strategy in today's context, then of course it will be relevant in today's world. Looking around us, we see that various alternative systems, i.e., systems which do not conform to the spirit of modern STEM, are quite successfully running in parallel. Some of these are branded by mainstream STEM as "unscientific", even "superstitious" but many people find them useful and effective in everyday life. Here are a few examples:

*4.1* ***Astrology:*** For the educated and salaried middle class, astrology is synonymous with superstition. However, a lot of people find it useful to cope with the inherent uncertainties of life. In India, Astrology is already a business. It can be further expanded in a more scientific manner.

4.2 ***Handloom***: Indian handloom has a huge market worldwide. Mahatma Gandhi recognized the power of Indian handloom as a socio-economic and political weapon against the British imperialism and he successfully applied it. In today's context, the handloom should be innovatively restructured to make it more efficient, more productive and more cost-effective. Indian handloom will then emerge as a viable alternative to factory based textile and thereby, will be able to transform the lives of millions of weavers all over the country.

4.3 ***AYUSH*** **(Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy):** AYUSH is perhaps the most glaring example of relevance of ancient Indian STEM. Origin of Homeopathy is Germany. The success of Homeopathy illustrates that through sustained effort, it is possible to make a system which do not conform to established scientific principles credible as an alternative system. I think in the same way as Homeopathy, Ayurveda, Yoga and Naturopathy can also be established as effective and complimentary health care systems.

4.4 ***Meditation***: It is difficult, if not impossible, to explore human consciousness through conventional scientific method because human mind is neither subject to laboratory based experimentation, nor suitable for mathematical modeling. However, it is known from very ancient times that along with the physical world consciousness exists as the most intimate reality that all of us continuously experience. Exploring human consciousness requires a completely different methodology. Indian meditation techniques can be compiled and systematized for this purpose.

4.5 ***Natural Farming***: Natural Farming is a chemical-free alias traditional farming method. It is an agroecology based farming system which integrates crops, trees and livestock with functional biodiversity. In India, Natural farming is promoted as Bharatiya Prakritik Krishi Paddhati Programme (BPKP) under centrally sponsored scheme- Paramparagat Krishi Vikas Yojana (PKVY). BPKP is aimed at promoting traditional indigenous practices which reduces externally purchased inputs. It is largely based on on-farm biomass recycling with major stress on biomass mulching, use of on-farm cow dung-urine formulations; periodic soil aeration and exclusion of all synthetic chemical inputs. It is reported that natural farming can reduce dependency on purchased inputs and will help to ease smallholder farmers from credits burden. This programme has been adopted in Andhra Pradesh, Karnataka, Himachal Pradesh, Gujarat, Uttar Pradesh and Kerala. Several studies have reported the effectiveness of natural farming- BPKP in terms of increase in production, sustainability, saving of water use, improvement in soil health and farmland ecosystem. It is considered as a cost- effective farming practices with scope for raising employment and rural development.

## 5. Conclusions

Considering all these, it is evident that ancient Indian STEM is very much relevant in today's world, not as the mainstream but as an alternative and parallel system of human wisdom. If we can empower this STEM with the principles of market economy, then it will produce greater impact on Indian society as well as the whole world.

# Faculty Development Programmes (FDPs)

Teachers' Training During the period of January - April 2024: 3803 numbers of Technical Teachers have been trained, through various Short-Term Training Programmes, broadly in the areas of Content Updating, Management, Pedagogy and Professional Skill Development. A total of 38 training programs were conducted for the Teachers and Technicians of different Polytechnic colleges and Engineering colleges all over the Country during the 1st Quarter of the Year 2024.

List of Training Programmes (January-April, 2024)

| Sl. No. | Programme Code | Programme Title | Programme Coordinator | From | To |
|---|---|---|---|---|---|
| 1 | SPL (Inhouse MIT) | Implementation of Autonomy | Urmila Kar | 06/01/2024 | 10/01/2024 |
| 2 | CU124C | Mathematical Foundation of Computer Science | Kinsuk Giri & Samir Roy | 08/01/2024 | 12/01/2024 |
| 3 | CU119F | Commentary IS:456-2000 with Expected Modifications In the Forthcoming Revision | Santanu Bhanja | 08/01/2024 | 12/01/2024 |
| 4 | CU126B | Artificial Intelligence & its Applications | Chandan Chakraborty | 15/01/2024 | 19/01/2024 |
| 5 | PS80F | Advanced Pedagogy | Arpan Kumar Mondal & Sukanta Kumar Naskar | 15/01/2024 | 26/01/2024 |
| 6 | SPL (GITAM) | NBA Accreditation Process (CO-PO mapping) | Rayapati Subbarao | 15/01/2024 | 26/01/2024 |
| 7 | CU128C | Applied Optimization | Nirmal Kumar Mandal | 16/01/2024 | 20/01/2024 |
| 8 | CU129B | Refreshers course on Finite Element Method | Mithu Dey | 22/01/2024 | 26/01/2024 |
| 9 | PS81B | ICT Enabled Learning in 21st Century | Rajeev Chatterjee, Samir Roy & Ranjan Dasgupta | 29/01/2024 | 02/02/2024 |
| 10 | PS74C | Research Methodology | Habiba Hussain | 29/01/2024 | 09/02/2024 |
| 11 | PS83C | Quality Improvement of the program and institute | Rayapati Subbarao | 29/01/2024 | 02/02/2024 |
| 12 | CU131A | Estimating and Costing of Non-conventional Energies | Sheela Yadav Rai | 05/02/2024 | 09/02/2024 |
| 13 | CU134F | Cloud Computing and HPC | Kinsuk Giri & Ranjan Dasgupta | 05/02/2024 | 09/02/2024 |
| 14 | PS12A | Advanced Pedagogy | Sukanta Kumar Naskar | 05/02/2024 | 16/02/2024 |
| 15 | CU135C | Additive Manufacturing of Polymers for Biomedical Applications | Subrata Mondal | 12/02/2024 | 16/02/2024 |
| 16 | CU137F | Industrial Instrumentation | Sagarika Pal | 19/02/2024 | 23/02/2024 |
| 17 | MGT10C | Management for office staff | Sukanta Kumar Naskar | 19/02/2024 | 23/02/2024 |
| 18 | PS31C | Induction Training | Subrata Mondal | 26/02/2024 | 01/03/2024 |
| 19 | CU139C | Engineering Thermodynamics and its Applications | Rayapati Subbarao | 04/03/2024 | 08/03/2024 |
| 20 | CU141B | Sensors and Instrumentation for today's Automation | Subrata Chattopadhyay | 04/03/2024 | 08/03/2024 |
| 21 | SPL43C | Research and Publication Ethics | Sukanta Kumar Naskar and Niladri Pratap Maity | 04/03/2024 | 08/03/2024 |
| 22 | CU144C | Finite Element Analysis | Nirmal Kumar Mandal | 11/03/2024 | 15/03/2024 |
| 23 | PS54C | Induction training | Sukanta Kumar Naskar | 11/03/2024 | 15/03/2024 |
| 24 | CU138F | Fundamentals of Machine Learning | Indrajit Saha | 11/03/2024 | 15/03/2024 |
| 25 | SPL42C | Development of Laboratory Instruction and Manual | Subrata Mondal | 11/03/2024 | 15/03/2024 |
| 26 | SPL 46C(BBSR) | Induction Training | Subrata Chattopadhyay | 11/03/2024 | 15/03/2024 |
| 27 | PS95C | Assessment and Evaluation | Dipankar Bose | 11/03/2024 | 15/03/2024 |
| 28 | CU146B | Machine Learning with Python | Kinsuk Giri & Chandan Chakrabarty | 18/03/2024 | 22/03/2024 |
| 29 | SPL40B | Online Pedagogy | Habiba Hussain | 18/03/2024 | 22/03/2024 |

| Sl. No. | Programme Code | Programme Title | Programme Coordinator | From | To |
|---|---|---|---|---|---|
| **30** | PS79C | Community Development through Technical Institutes | Sheela Yadav Rai | 18/03/2024 | 22/03/2024 |
| **31** | PS71B | Effective Teaching and Research | Indrajit Saha | 18/03/2024 | 22/03/2024 |
| **32** | CU147B | Application of open source software in civil engineering | Mithu Dey | 25/03/2024 | 29/03/2024 |
| **33** | SPL38C | Software Quality Issues (Application Specific) | Ranjan Dasgupta | 25/03/24 | 27/03/24 |
| **34** | CU150C | Vibration in Engineering Systems | Santanu Bhanja & Nirmal Kumar Mandal | 25/03/2024 | 29/03/2024 |
| **35** | SPL (Inhouse BCET) | Research Methodology | Rayapati Subbarao | 15/03/2024 | 17/03/2024 |
| **36** | SPL (Inhouse SIST-Sikkim) | OBE and NBA Accreditation | Urmila Kar | 18/03/2024 | 22/03/2024 |
| **37** | SPL (Inhouse GIMT) | MATLAB | Sagarika Pal | 20/03/2024 | 22/03/2024 |
| **38** | SPL01 (In-house Dibrugarh University) | Design and Implementation of Outcome-Based Curriculum | Dr. Urmila Kar | 02/04/2024 | 06/04/2024 |
| **39** | CU08C | Importance of Soil Investigation in Construction Projects | Naveen BP | 08/04/2024 | 12/04/2024 |
| **40** | PS08B | ICT Tools for Assessment | Kinsuk Giri | 10/04/2024 | 12/04/2024 |
| **41** | CU10F | Refreshers Course on Engineering Mechanics | Dipankar Bose | 15/04/2024 | 26/04/2024 |
| **42** | SPL02 (Inhouse DAITM) | Effective Teaching-Learning Process | Habiba Hussain | 15/04/2024 | 26/04/2024 |
| **43** | CU11F | Introduction to Coding Theory | Rajeev Chatterjee | 15/04/2024 | 19/04/2024 |
| **44** | PS09B | Research Methodology and Data Analysis | Chandan Chakraborty | 22/04/2024 | 26/04/2024 |
| **45** | CU06B | VLSI Design | Niladri Pratap Maity | 22/04/2024 | 26/04/2024 |
| **46** | CU14B | Analysis and Design of Super-structures and Foundations using a powerful Structural Engineering Software | Santanu Bhanja | 22/04/2024 | 26/04/2024 |
| **47** | CU17B | Sensors and IoT Applications | Sagarika Pal | 22/04/2024 | 26/04/2024 |
| **48** | SPL03 (In-house NITJ) | Outcome Based Education and NBA Accreditation | Urmila Kar and Rayapati Subbarao | 26/04/2024 | 30/04/2024 |

# Invited Lectures

1. **Dr. Kinsuk Giri** delivered invited talk on "PYTHON Programming", in a One Day Seminar, *March 02, 2024, Asutosh College, Kolkata, India*

2. **Dr. Kinsuk Giri** delivered invited talk on "Parallel Computing and HPC", in a Six Day FDP Program, *February 13, 2024, Mahadevananda Mahavidyalaya, Barrackpore, India*

*3.* **Prof. Niladri Pratap Maity** delivered Special Invited Talk at Mizoram University, as part of the Prime Minister's "India's Techade: Chips for Viksit Bharat" initiative which was inaugurated by Prime Minister of India on March 13, 2024.

4. **Prof. Niladri Pratap Maity** delivered invited Talk at "International Conference on Advanced Innovative Research in Engineering and Technology (ICAIRET-2024)", 13th-15th March, 2024.

5. **Prof. Niladri Pratap Maity** delivered invited Talk at DST funded "FDP on Industry 4.0 and Smart System", Organized by JIS College of Engineering, Kalyani, West Bengal.

# Invited Lectures of Prof. Debi Prasad Mishra, Director, NITTTR Kolkata

1. Delivered a lecture on "Seminar on Glimpses of Traditional Indian Knowledge System on 15th January 2024 at Government College of Engineering, Bhawanipatna, Kalahandi
2. Invited as Chief Guest, "Language, literature, Creativity, Science, Sport Conclave" on 19th January 2024 at Peary Mohan Academy Cuttack

3. Delivered a talk on শিক্ষক সম্মেলন "ভারতীয় জ্ঞান পরম্পরা প্রচার ও প্রসার" on 28th January 2024 organized by বিদ্যা ভারতী উচ্চ শিক্ষা সংস্থান

4. Delivered a lecture on "Indian Knowledge System (IKS)" on 23rd February 2024 at Punjab Engineering College Chandigarh.

5. Delivered a lecture on "Indian Knowledge System (IKS) on Importance of Ancient Indian Technology in Modern Times" on 23rd February 2024 at IIT Ropar.

6. Invited as Guest of Honor on the Valediction Ceremony of 14th Inter-NITTTR Sports Meet on 23 February 2024 at NITTTR Chandigarh

7. Delivered a lecture on "Ancient Indian Technology" on 29th February 2024 at IIT Hyderabad

8. Delivered a lecture on Centre of Indian Knowledge System Titled "Importance of Bhagwat Geeta in life" on 3rd March 2024 at National Institute of Technology (NIT) Jamshedpur

9. Delivered a lecture on "One Nation BootCamp Kolkata Empowering Tomorrow's Leaders Swavalambi Bharat" on 3rd March 2024 at Maulana Abul Kalam Azad Institute of Asian Studies (MAKAIAS), Kolkata

10. Invited as Guest of Honour in the Inaugural Function of hackathon focused on Geographical Indications (GI) and related traditional knowledge and cultural expressions on 8th March 2024 at West Bengal National University of Juridical Sciences (WBNUJS)

11. Delivered a Lecture on "Need of Research" on 16th March 2024 at BCET Balasore

12. Delivered a Lecture on "Introduction to Ancient of Indian Technology" on 18th March 2024 at Skill Development Centre, Bhubaneswar

13. Delivered a Lecture Series under Mechanical Engineering Colloquium "Saga of Indian Traditional Technology" on 19th March 2024 at School of Mechanical Engineering KIIT Deemed to be University.

14. Delivered a Lecture on "Glimpses of Bharitya Traditional Technology" on 19th March 2024 at IIT Bhubaneswar.

15. Delivered a Lecture and Faculty Interaction on 20th March 2024 at ITI Cuttack.

16. Delivered a Lecture on "Teaching & Learning Capacity Building" a must important Factor for a Teacher on 21st March 2024 at Bhadrak Engineering School & Technology (BEST).

17. Invited as Chief Guest for the managerial session of the STTP and online delivering a talk on STTP on future Aspect and Machine Learning on 25th March 2024 at GITAM Bhubaneswar

18. Delivered a Lecture as a speaker on "A Seminar on Stress management with Ancient Bharatiya Wisdom" on 4th April 2024 at Delhi Technological University.

19. Delivered a Lecture as a speaker on "A Workshop on Relevance of Ancient Technology in Modern Times in Context of NEP-2020" on 5th April 2024 at Delhi Technological University.

# Publications

JOURNALS

- "A Computational Study on the Modelling of The Flow Field Plates of a Polymer Electrolyte Membrane Fuel Cell", by Susmita Singh, **Kinsuk Giri** and Adrita Chowdhury, IRRET 2024, March 2024
- "Remarkable Contributions by Jaina Mathematicians in Ancient India" by **Kinsuk Giri** and DP Mishra, *Journal of Engineering, Science & Education (JESE), Vol. 1, No 1, 32, 2024*
- LB Mahanta, DR Mahanta, T Rahman, **C Chakraborty**, Hand-loomed fabrics recognition with deep learning by Nature -Scientific Reports 14(1):7974. doi: 10.1038/s41598-024-58750-z(2024).
- **Niladri Pratap Maity et. al.,** "Analysis of Different Innovative Gate Field Plate Structures of AlGaN/GaN HEMT", ***Data Science and Communication (Springer),*** pp. 439-448, 2024, https://doi.org/10.1007/978-981-99-5435-3_31.
- **Niladri Pratap Maity et. al.,** "Analytical model and analysis of RF MEMS switch for Ka-band applications", ***Microsystem Technologies (Springer),*** vol. 30, pp. 117-125, 2024, https://doi.org/10.1007/s00542-023-05581-z.
- **Rayapati Subbarao**, 'Analysis on the appropriate Pedagogy approaches applicable for 'Engineering Thermodynamics' Course', International Journal of Engineering Education, Volume 40 (1), pp. 75-82, 2024.
- **Rayapati Subbarao**, 'Comparison of Flow and Loss Aspects in the Rotors of a Counter Rotating Turbine', Transactions of the Canadian Society for Mechanical Engineering, TCSME-2023-0100, Volume 48(1), March 2024, DOI: 10.1139/tcsme-2023-0100.

CONFERENCE, SYMPOSIUM

- **Niladri Pratap Maity et. al.,** "Behavioral Changes in a Single Fixed to Fixed Resonator on Actuation of Micromachined Accelerometer", *International Conference on Advanced Innovative Research in Engineering and Technology (ICAIRET-2024),* 13th - 15th March, 2024.
- **Niladri Pratap Maity et. al.,** "Simulation Study of Dielectric Modulated Trench Double Gate Junctionless FET for Biosensing Application", *International Conference on Advanced Innovative Research in Engineering and Technology (ICAIRET-2024),* 13th -15th March, 2024.
- **Niladri Pratap Maity et. al.,** "Analysis of Piezoceramic Material Using PZFLEX", *International Conference on Advanced Innovative Research in Engineering and Technology (ICAIRET-2024),* 13th - 15th March, 2024.
- **Niladri Pratap Maity et. al.,** "The Parametric Study of a Clamped-to-Clamped Single Beam Accelerometer", *International Conference on Advanced Innovative Research in Engineering and Technology (ICAIRET-2024),* 13th -15th March, 2024.
- **Niladri Pratap Maity et. al.,** "Modeling and Simulation of a Square Membrane MEMS Transducer using COMSOL Multiphysics", *International Conference on Advanced Innovative Research in Engineering and Technology (ICAIRET-2024),* 13th -15th March, 2024.
- **Niladri Pratap Maity et. al.,** "Investigation on MEMS based Hexagonal Capacitance Micromachined Ultrasonic Transducer", *International Conference on Advanced Innovative Research in Engineering and Technology (ICAIRET-2024),* 13th -15th March, 2024.

BOOK CHAPTER

- **Niladri Pratap Maity** et al., "Futuristic Trends in Electronics & Instrumentation Engineering," Vol. 3, Book 2, IIP Series (India & USA), E-ISBN: 978-93-6252-452-2, Print-ISBN: 978-93-6252-495-9.
- Souvik Ganguli, Gagandeep Kaur, and **Prasanta Sarkar**. A Hybrid Gray Wolf Optimizer for Modeling and Control of Permanent Magnet Synchronous Motor Drives, Editors: Paramartha Dutta, Satyajit Chakrabarti, Abhishek Bhattacharya , Soumi Dutta, Celia Shahnaz Emerging Technologies in Data Mining and Information Security Proceedings of IEMIS 2022, Volume 2, Lecture Notes in Networks and Systems volume 490, Springer, ISSN 2367-3370 ISSN 2367-3389 (electronic) Lecture Notes in Networks and Systems.

# 60th Foundation Day of the Institute (Diamond Jubilee)

NITTTR, Kolkata had celebrated its Diamond Jubilee Celebration of Foundation Day during the period between January 10-12, 2014. During this three-day ceremony several academic, Cultural and social activities were conduction.


*Blood donation camp*

One the first day of celebration a blood donation camp was organized by the Institute in collaboration with Institute of Blood Transfusion Medicine and Immunohematology, Manicktala, Kolkata-700006.


*The Diamond Jubilee Memorial was inaugurated by Hon'ble Chief Guest Prof. Dhanush Dhari Mishra, Ex-Chairman BoG, IIT Dhanbad*

On January 11, the programme started with hoisting of National Flag by Hon'ble Director Professor Debi Prasad Mishra followed by National Anthem. Thereafter, Institute's flag was hoisted by outgoing members of faculty and staff (Dr. Prasanta Sarkar/ Shri Bishan Bahadur Pradhan/ Shri Dulal Chandra Naskar/Shri Dipak Gupta/Shri Tapas Sarkar) Among the invited dignitaries Prof. Dhanush Dhari Mishra, Ex-Chairman BoG, IIT Dhanbad was the Hon'ble Chief

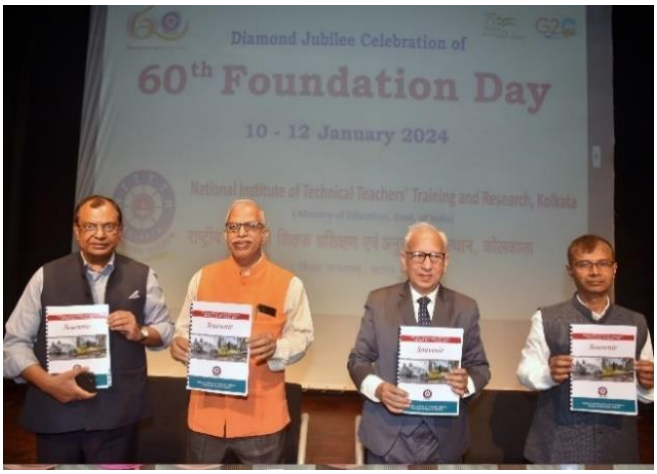
Guest. Prof Tapas Chakraborty, Hon'ble Vice Chancellor, MAKAUT, West Bengal was the Guest of Honour. Sri Sajjan Bhajanka, Hon'ble Chairman, BOG, NITTTR, Kolkata was present as a special dignitary.


*The Solar Tree which was designed and assembled by the members of faculty and staff of NITTTR, Kolkata was inaugurated by Prof. Tapas Chakraborty, Hon'ble Vice Chancellor and Guest of Honour*

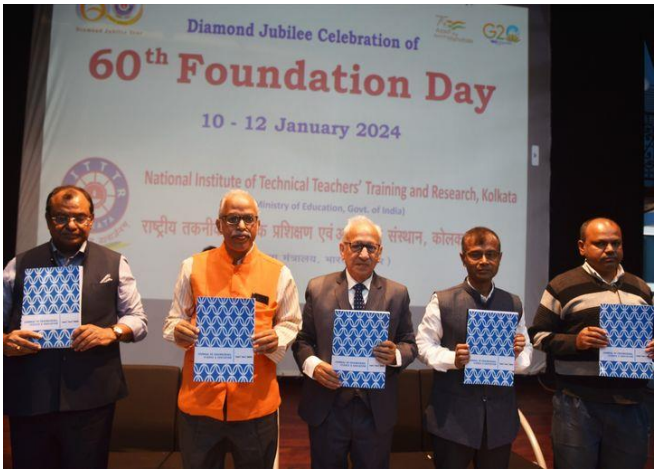

*The programme, Celebration of 60th Foundation Day of the Institute (Diamond Jubilee) was inaugurated by lighting the lamp by the dignitaries of the programme*

The Diamond Jubilee Memorial was inaugurated by Hon'ble Chief Guest. The Solar Tree which was designed and assembled by the members of faculty and staff of NITTTR, Kolkata was inaugurated by Professor Tapas Chakraborty, Hon'ble Vice Chancellor and Guest of Honour. An AR / VR Laboratory was set-up by Professor Chandan Chakraborty and his team members which was inaugurated by Hon'ble Chairman BoG, NITTTR, Kolkata Sri Sajjan Bhajanka. After inauguration the programme started in the Netaji Subhas Chandra Bose Auditorium at around 10:30. The Chief Guest, Guest of Honour, and Chairman BOG, in their speeches highlighted the opportunity as well as challenges in the coming days for NITTTR, Kolkata. The dignitaries at the dais also inaugurated the Souvenir of the event and Institute Journal (Journal of Engineering, Science and Education). A panel discussion on "Role of Stakeholders in implementing NEP 2020" was also conducted. Apart from conventional activities, Swami Tejomayananda from Chinmaya Mission conducted a special activity. The programme ends at around 8:30 with professional band performance and some of the family members of the employees as well as employees along-with students also participated in the cultural program.

*Sri Sajjan Bhajanka, Hon'ble Chairman, BoG, NITTTR, Kolkata Inaugurating the Augmented Reality (AR) Virtual Reality (VR) Lab*




*Inauguration of Souvenir. From left Sri Sajjan Bhajanka, Hon'ble Chairman, BoG, NITTTR, Kolkata, Prof. Debi Prasad Mishra, Director, NITTTR Kolkata, Hon'ble Chief Guest Prof. Dhanush Dhari Mishra, Ex-Chairman BoG, IIT Dhanbad and Prof. Tapas Chakraborty, Hon'ble Vice Chancellor and Guest of Honour*




*Inauguration of the Journal of Engineering, Science & Education*

On the third day (i.e. Jan 12, 2024), the National Youth Day was celebrated as a part of the ceremony, on the occasion of birth anniversary of Swami Vivekananda. A plenary talk by Swami Atmapriyananda Pro-Chancellor, Ramakrishna Mission Vivekananda Educational and Research Institute, Belur, Howrah was organized. He delivered a speech on the life and philosophy of Swami Vivekananda. He highlighted the importance of knowledge and wisdom. On this occasion, before his speech Swami Atmapriyananda garlanded the statue of Swamiji and pay tribute to him in presence of the Director and other members of faculty and staff. Later Swami Atmapriyananda also inaugurated the status of Rabindranath Tagore in the Institute campus. The programme ended with Vote of Thanks by Dr. Rajeev Chatterjee coordinator of the committee.

## Report on Book Exhibition and Display of Library-Related Technologies

The Central Library of NITTTR Kolkata conducted a one-day Book Exhibition and Display of Library-Related Technologies, on 11th January 2024 in the Institute's campus during the 60th Dimond Jubilee Celebration of the Institute's Foundation Day.

The exhibition presented a diverse collection of domain-specific books from renowned publishers such as Taylor & Francis, Cambridge University Press, Sage, Oxford University Press, Pearson, McGraw-Hill, Shroff, Wiley, Elsevier, Springer, Hachette India, Penguin Random House India, Harper Collins, Rupa, Viva, and others. These publications were curated and exhibited through Bharat Book Distributors, Kolkata and Aditya Books, Noida, through Balani Infotech Pvt. Ltd. The showcased books covered various domains, including Technical Education, Engineering Education, Education Policies (with a focus on NEP 2020), Indian Knowledge System (IKS), Ancient Indian Education, Educational Technology, Resilient Pedagogy, Critical Pedagogy, Teacher Training, Research Methodology, Graphics & Videography, Artificial Intelligence, Machine Learning, and General Books encompassing technology-related Fiction and Non-Fiction.

Additionally, the event highlighted advancements in library-related technologies, featuring displays of RFID, Koha ILMS, DSpace, DrillBit, LANAQUILL, MyLOFT, RemoteXS, and more. Avior Technologies Pvt. Ltd., Kolkata, and Balani Infotech Pvt. Ltd., Noida, UP, played a pivotal role in presenting these cutting-edge technologies to the audience. This event served as a valuable platform for the academic community to explore the latest publications and advancements in library-related technologies


*Book exhibition on the occasion of Dimond Jubilee year celebration 2024*

## Birth anniversary of Swami Vivekananda on 12.01.2024


*Swami Atmapriyananda Pro-Chancellor, RMVERI, garlanding the statue of Swami Vivekananda*

12th January 2024 is the National Youth Day, on the occasion of birth anniversary of Swami Vivekananda a plenary talk by Swami Atmapriyananda, Pro-Chancellor, RMVERI, Belur, Howrah was organized on the life and philosophy of Swami Vivekananda. On this occasion, Swami Atmapriyananda garlanded the statue of Swami Vivekananda.

*Swami Atmapriyananda, Pro-Chancellor, RKMVERI, Belur sharing his spiritual wisdom*

*Swami Atmapriyananda, Pro-Chancellor, RKMVERI, Belur inaugurating the statue of Rabindranath Tegore*

## ATAL-AICTE FDP on Waste Management Technology & Sustainability Jan 15-20, 2024

*A moment of hands-on-practice session in the programe*

## Birthday Celebration of Netaji Subhash Chandra Bose

*Prof. Debi Prasad Mishra, Director, NITTTR, Kolkata garlanding the image of Netaji Subhash Chandra Bose*

This year on 23rd January, this Institute observed 123rd birth anniversary of Netaji Subhash Chandra Bose, the great leader of this country. At the outset, Professor Santanu Bhanja, Coordinator of the Organizing Committee welcomed all who were present in the Auditorium and handed over to Shri Dipak Gupta, Co-coordinator to continue the programme. First of all, Dr Debi Prasad Mishra, Director was requested to garland Netaji and subsequently Professor Bhanja was also requested to do so. Thereafter all faculty, staff and students were requested to offer their tribute with flowers.

*Discussions and deliberations on Netaji Jayanti*

On behalf of the organizing committee, Shri Dipak Gupta, Co-coordinator requested Professor Bhanja to say few words about Netaji and he expressed his views in detail highlighting Netaji's intense love, renunciation and sacrifice for our beloved motherland. Shri Dipak Gupta recited one poem for Netaji. Among the faculty, Professor Rayapati Subba Rao communicated some important historical events associated with Netaji. A

student presented his speech with quoting the famous word of Bose, " Give me blood, I will give you freedom " and explained the significance of this day. Finally, Director addressed the audience highlighting the Bose's life history and his courageous activities. Shri Dipak Gupta, Co-coordinator gave vote of thanks to all faculty, staff and students for their participation for the programme making it grand success.

## Pledge on National Voters' Day on 25.01.2024

National voters' day was celebrated with great enthusiasm on 25th January 2024. On this occasion the faculty, staff, students and trainees of the institute took pledge administered by Dr. Rayapati Subbarao in presence of Prof. Debi Prasad Mishra, Director, NITTTR, Kolkata

*Dr. Raiapati Subbarao administering the pledge on National Voter's Day to the NITTTR Kolkata fraternity.*

## Report on Celebration of 75th Republic Day

The Institute celebrated the 75th Republic Day in the Institute premise on 26th January, 2024. The programme of the celebration of the 75th Republic Day started with the unfurling of the tricolour by the Director of the Institute followed by the National Anthem.

The programme was chaired by Prof. Debi Prashad Mishra, Director of the Institute and coordinated by Dr. Habiba Husain, Associate Professor and Shri Joseph Bhutia, SSA. The Director delivered the speech on the importance of celebration of Republic Day on national prospective. The programme was attended by the members of faculty, staff, students and other who are associated with the various activities of the Institute. The programme was ended with the vote of thanks and light refreshments.

*Prof. Debi Prasad Mishra, Director, NITTTR Kolkata hoisting the National Flag on the Republic Day*

## National Seminar on "Bharatiya Gyan Parampara" on 9th February 2024

*On the dais Prof. Debi Prasad Mishra, Director, NITTTR Kolkata, Dr. Manohar Shinde, Ex Faculty, UCLA & USC Schools of Medicine, Los Angeles, USA, the distinguished Keynote Speaker and Prof. Niladri Pratap Maity, Convenor*

National Seminar on "Bharatiya Gyan Parampara", 2024 was held at National Institute of Technical Teachers' Training and Research (NITTTR) Kolkata on 9th February, 3 pm onwards (Hybrid mode) which was organized by NITTTR-Kolkata. In the inaugural

programme, Prof. Niladri Pratap Maity, Professor of NITTTR Kolkata, the Convenor of the seminar mentioned the objectives of the seminar. Prof. Debi Prashad Mishra, Director of NITTTR, Kolkata and seminar chair welcomed all participants of the seminar and highlighted the important issues about the subject matter of the seminar. Dr. Manohar Shinde, Ex Faculty, UCLA & USC Schools of Medicine, Los Angeles, USA, the distinguished Keynote Speaker for the inaugural program of National Seminar on "Bharatiya Gyan Parampara" share his thoughts and views on this occasions.


*Dr. Manohar Shinde delivering his lecture*

In the first talk of this seminar, Prof. Debi Prasad Mishra, Honourable Director of NITTTR Kolkata has shared his knowledge and briefly discussed with his thoughts on an Introduction and relevance of Bharatiya Paramparik Gyan. Next session, our distinguished Keynote Speakers, Dr. Manohar Shinde, Ex Faculty, UCLA & USC Schools of Medicine, Los Angeles, USA, delivered a wonderful lecture on Ecosystem for Indian Knowledge System. Finally, the seminar ended with closing remarks and a vote of thanks given by Prof. Niladri Pratap Maity, Professor of NITTTR Kolkata, the convenor of National Seminar on "Bharatiya Gyan Parampara", 2024. Around 100 participants from different state of India (online and offline) joined and participated in this seminar.

*Participants paying deep attention to the address of the resource person*

# 14th inter NITTTR sports meet at NITTTR Chandigarh



*Opening Ceremony of 14th Inter-NITTTR Sports Meet*

A spectacular display of resilience, leadership and responsibility was witnessed on 20th February 2024 when NITTTR Chandigarh conducted the inaugural ceremony of the 14th Inter NITTTR Sports Meet. Directors and representatives from all four NITTTRs shared the dais. The chief guest was Ms Chahat Deep Kaur, who represented India as an International Shooter. Director NITTTR Chandigarh, Director NITTTR Chennai were also present as chief guests. The orchestra band played the music and accompanied all the shooters to the podium. The enthusiasm of the participants, organisers and other delegates was so high that the whole podium and its surroundings could feel the vibrations of joy.

*Badminton is going on*

*Table Tennis Men's Double is going on*

*Chess is going on*

*Table Tennis Men's Singles is going on*

*Carom is going on*

*Volleyball is going on*

*100 meter run*

Many events were planned during the meet and from 20 -23 February 2024, these had witnessed friendly and challenging competitions. Faculty and staff from all four NITTTRs participated in the sports meet. There were 15 events under 7 different games viz. Badminton, Table Tennis, Carom, Chess, Auction Bridge, Volleyball and 100 Metre Race. Twenty-one participants from NITTTR Kolkata participated in various events. NITTTR Kolkata achieved the third position in the overall table by winning 2 gold medals, 4 silver medals and 3 bronze medals. There was no female participant representing the institute.

*Valedictory Session*

NITTTR Chandigarh won the championship trophy to top the medal table. NITTTR Bhopal finished second while NITTTR Chennai finished 4th. A cultural programme was organised in the evening of the second day. The main attraction of the cultural programme was an Odissi dance performance by professional Odissi dancers. Besides, participants from different NITTTRs and their family members performed various cultural programmes. A few participants sang songs and performed dances in Hindi, Tamil, Punjabi and other languages. Local organisers presented a short dance programme to showcase Punjabi culture, manners and behaviour. The audience enjoyed the programme which lasted long and had unique moments. There was also a short trip to Virasat-e-Khalsa (formerly known as Khalsa Heritage Memorial Complex), a museum located in Anandpur Sahib. This trip was organised by the host, NITTTR Chandigarh. The museum gives an insight into the events that took place in Punjab five hundred years ago, which gave birth to Sikhism and eventually the Khalsa Panth. On the last day, a valedictory programme was held at the auditorium of NITTTR Chandigarh. All the Sports Coordinators of the four NITTTRs, the Director of NITTTR Chennai and the Director of NITTTR Kolkata were present on the dais. Medals were presented to the winners of all the sports. The overall winner's trophy and other prizes were distributed in a very grand manner. Finally, the baton for organising the 15th Inter NITTTR Sports Meet was handed over to NITTTR Kolkata. The programme ended with everyone singing the national anthem 'Janagamana adhinayaka jayahe bharata bhagya vidhata'. The participants left the venue on a high note, hoping to meet again in Kolkata next year.

## AICTE sponsored ATAL-FDP

The ATAL FDP on "Life Skills for Empowering 21st Century Learners" will be conducted during 26th February to 2nd March 2024 in face-to-face mode in our Institute premises.


*Prof. Debi Prasad Mishra, Director, NITTTR Kolkata addressing the participants*

## Live streaming of Hon'ble Prime Minister speech on YouTube Channel

On 13th March 2024 Hon'ble Prime Minister Shri Naredra Damodardas Modi addressed the nation on the topic of Vikshit Bharat. NITTTR Kolkata made an arrangement for live streaming of Prime Minister speech on youtube channel which was watched and listened to by a large audience of the Institute.

*Members of NITTTR Kolkata family listening to the Address by Hon'ble Prime Minister*

# Awareness campaigning and disseminating on three new criminal Laws on 26.03.2024

The Institute made an arrangement for disseminating and creating awareness on three new criminal laws on 26th March 2024.


*Discussions on the new criminal law is going on*


*Campaigning is going on*

Initially, the coordinator gave the welcome address and briefed the importance of the event. Later, he mentioned about the new Criminal Laws and explained their significance to the audience. He covered punishment in case of acid attack, community service option, deshdroh and provision for first time offenders. Dr. Subbarao detailed about human trafficking, proclaimed offenders, sexual harassment, provisions for women and children. He highlighted the technologies being used in investigations. Dr. Rajeev Chatterjee added valuable information about their implementations. All participated in the discussion. The programme ended with the vote of thanks.

# Inauguration of Netaji Subhas Chandra Bose statue

Hon'ble Director Prof. Debi Prasad Mishra inaugurated the statue of Netaji Subhash Chandra Bose in front of the Netaji Subhash Chandra Bose Auditorium on 14th April 2024

*Unveiling the statue of Netaji Subhash Chandra Bose*

# 133rd Ambedkar Jayanti

NITTTR, Kolkata, celebrated 133rd Ambedkar Jayanti on 14th April 2024 at Sri Ramakrishna Paramahansa Mini Auditorium under the Coordination of Dr. Sailendra Nath Mandal, Professor and Head, Department of Civil Engineering to mark the birth anniversary of Dr. Bhim Rao Ambedkar, father of the Indian Constitution.

The event commenced at 3.00 p.m. with welcome address to the gathering by Mr. P. D. Siyodia. Prof. Sailendra Nath Mandal spoke during the programme and highlighted the early Life and Education, Relationship with Buddhism, Legacy of Dr Ambedkar. He mentioned the impact and significance of Ambedkar Jayanti. He also highlighted the life & contributions of Dr. Ambedkar and how he becomes a famous personality through excellent academic achievements with limited resources & challenges. He also said, "Ambedkar will always be alive in the hearts of Indian for his great deeds".


*Shri P.D. Siyodia delivering the welcome address*

Prof. Debi Prasad Mishra, honorable Director of NITTTR, Kolkata, spoke on the occasion and said that Dr Ambedkar has immensely contributed towards

eradication of caste discrimination, gender equality and untouchability. He said that Dr BR Ambedkar has set an example for us through his sincerity, dedication and hard work. Let us fulfil the vision of the great leader by ensuring equal opportunity for everyone in the society, he said.

Mr. Dipanjan Nath, M.Tech Student of Civil Engineering in his speech, mentioned "Dr. Ambedkar represented all political and social activities which expanded the explanation of human advancement and satisfaction." He said "Dr. Ambedkar established Bahishkrit Hitakarini Sabha which set a solid stage to speak to the complaints of the discouraged classes. BANAE (Dr. Babasaheb Ambedkar National Association of Engineers) was formed around 50 years ago as students' organization at VNIT Nagpur for fighting against discrimination and humiliation of students from marginalized section of society by the teachers and staff of Universities/Engineering Colleges/IITs/Polytechnics/ITIs etc".

Mr. Rhitwik Bhattacharjee, M.Tech Student of Electrical Engineering Department, highlighted the importance and significance of Dr. Babasaheb Ambedkar's personality and capability. He also mentioned contributions of Babasheb to the uplift of lower caste people. He also said "Ambedkar dedicated his life to the empowerment of the deprived and the exploited sections of society".

Mr. Adarsh Kumar, M.Tech Student of Mechanical Engineering Department in his speech mentioned importance and significance of five key points i.e., Equality, Social Justice, Education, Democracy and Human dignity. He also said "Ambedkar was a legal luminary, visionary statesman, outstanding constitutional expert, brilliant parliamentarian & social reformer. He was the voice of the socially oppressed and dedicated his life to the upliftment of the marginalized sections of society. His iconic life and noble thoughts continue to guide the nation."

At the end, a vote of thanks has been given by Mr. P. D. Siyodia, Co-coordinator of Dr. B R Ambedkar Jayanti Celebration Committee.

# Miscellaneous

## a) Awards

Research Paper by **Niladri Pratap Maity** Title: "Modeling and Simulation of a Square Membrane MEMS Transducer using COMSOL Multiphysics", received Best Paper Award in Electronics and Communication Track at International Conference on Advanced Innovative Research in Engineering and Technology (ICAIRET-2024), 13 th -15 th March, 2024.

**Prof. Naveen BP** has been awarded the prestigious "Teachers Associateship for Research Excellence (TARE) fellowship 2024" for the project title: "Assessment of Modified Sewage Sludge as Cover Material in Landfills" by the Science and Engineering Research Board (SERB).

## b) Session Chair:

**Dr. Niladri Pratap Maity** chaired a Session in the "International Conference on Advanced Innovative Research in Engineering and Technology (ICAIRET-2024)", 13$^{th}$ -15$^{th}$ March, 2024.

## c) MOOCs

A 2 credit MOOC on Resilient Pedagogy has been offered on the SWAYAM platform in February 2024, coordinated by Dr. Urmila Kar & Dr. Habiba Hussain.

A MOOC on "Academic and Research Report Writing" was offered on the SWAYAM platform from 29$^{th}$ January to 30$^{th}$ April 2024. More than six thousand learners enrolled in this course. The course was developed by Dr. Samir Roy, Dr. Rayapati Subbarao and Dr. Kinsuk Giri.

## d) Memorandum of Understanding

National Institute of Technical Teachers' Training & Research (NITTTR), Kolkata, signs a MEMORANDUM OF UNDERSTANDING (MoU) with Sarathy Geotech and Engineering Services Pvt Ltd (SGES) to formalize their partnership in Training, Education, R&D on various aspects of geotechnical engineering. (16.04.2024)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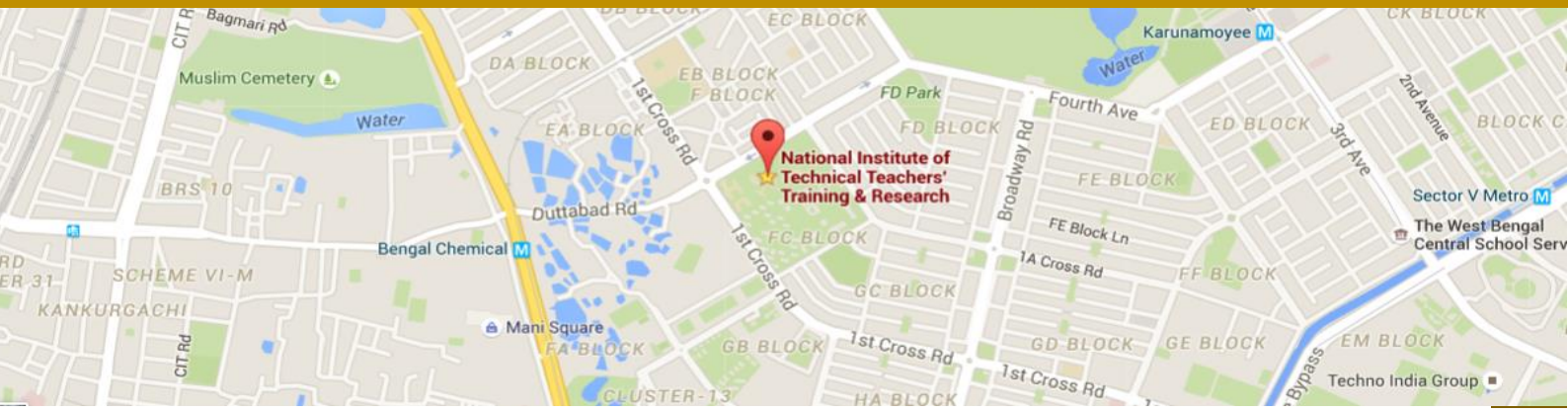
**"Your purpose in life is to find your purpose and give your whole heart and soul to it"**
**– Gautam Buddha**




Distance:

- From Howrah Railway Station: **42 min** (8.1 km) via Maniktala Main Road
- From Sealdah Station: **26 min** (7.4 km) via Beliaghata Main Road and Broadway Road
- From Kolkata Railway Station: **16 min** (4.8 km) via Canal Circular Road
- From Shalimar Station: **38 min** (18.8 km) via Parama Island Flyover
- From Netaji Subhas Chandra Bose International Airport: **27 min** (11.5 km) via Kazi Nazrul Islam Sarani/VIP Road

Google map link: https://goo.gl/maps/F7gssJoeqxSvffqf9

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